

CIO

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SEVEN DOLLARS

SPECIAL SECTION

STRATEGIC OUTLOOK ON REENGINEERING THE I.S. GROUP:

*Do Business
Renovations
Begin At
Home?*

ALSO INSIDE:

**EDI: The Next
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Unisys Corp.'s
Robert J. Leto



i magine ripping into the idea that computer downsizing can



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CIO

VOLUME 6, NUMBER 14

STRATEGIC OUTLOOK

REENGINEERING I.S.

Deconstructing the Status Quo

Just because things have been done a certain way since Hector was a pup, is that any reason to keep it up? Nope. Like the overall business enterprise, IS needs to take a hard, critical look at time-worn structures and strictures.

By Lew McCreary

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Keeping Customers Connected

Sprint Corp.'s process-improvement effort focused the company squarely on keeping its customers happy. Thanks to improved billing and time-to-market, fewer are hanging up.

By Megan Santosus

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Coming Back from the Brink

At Unisys, an IS overhaul has changed the organization's image. Where once it was reviled as obstructionist, it now has the full support of user management.

By Mickey Williamson

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Getting into the Game

For years, the IS organization at J.M. Huber was mired in complacency. It has taken strong leadership to foster change and get staff out of the doldrums.

By Mickey Williamson

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M O R E ► ► ►





Just when you were beginning to understand the old definition of networking, there's a new one. In a world where lots of vendors have figured out how to network their own products, only Novell has spent the last ten years uniting products from different vendors into one seamless information

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EDI Release 2.0

The EDI leaders of yesterday are taking advantage of new ways of doing business electronically to enable JIT manufacturing, consumer-purchase tracking and a shift of responsibilities to the supplier.

By Allan E. Alter

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Six Months of CIO

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By James A. Willbern

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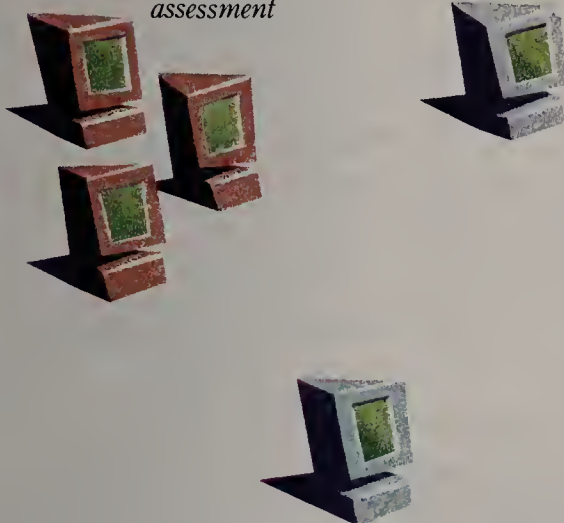
STATE OF THE ART: PC CENSUS TAKERS

The proliferation of PCs and the need to comply with software-licensing regulations are prompting many organizations to take stock of their existing desktop investments. Several vendors offer asset-management packages for just that purpose.

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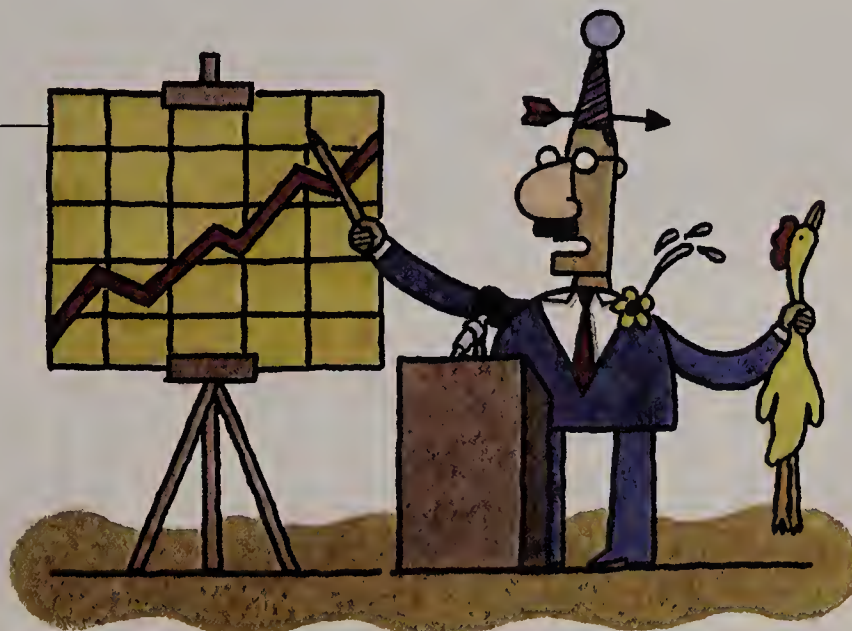
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IS organizations have been called reactionary when it comes to reengineering their own operations. This seems strange in light of the fact that the IS group is viewed as inflicting change, maybe even chaos, on the rest of the organization.

But this perception of IS doesn't seem to be too far off the mark, according to top information executives, many of whom think it is time to do something about changing that image. Our Strategic Outlook this month, "The Road to Renewal," starting on Page 31, examines how enterprises are putting their IS houses in order.

In looking at the three companies profiled—Sprint, J.M. Huber and a unit of Unisys—it quickly became evident that IS reengineering efforts were only possible when the information executives and business-unit management recognized how closely allied they were in achieving their company's strategic goals.

Sprint's reengineering effort required it to relinquish its emphasis on organizational functions and concentrate on business processes and the company's customers. CIO Ron Ponder and other executives recognized that product development had to be collaborative and integrated and involve the IS group from the very beginning. Today, Sprint's systems-development efforts support a corporate customer strategy that has realized a 40 percent improvement in product-development time.

Reengineering at J.M. Huber was part of a general reorganization in the corner offices. The company's leaders would get divisions talking to each other about common goals and how information systems could enable these strategies. J.M. Huber made a major investment in bringing in outside change agents who, among other things, required IS professionals to do a skills assessment. In the process, the company took on the characteristics of a "learning organization," a place where employees were encouraged to take more risks, with the understanding that some failure would be part of the process.

The IS reengineering effort at Unisys's Orange County Operation required cross-pollination between IS professionals and a manufacturing unit. The executives instituting this interdisciplinary approach had high expectations of involvement between IS and manufacturing personnel. After a lot of culture shock, the two groups began getting along famously. One executive dubbed the process a "grand sociological experiment."

Marcia Blumenthal

PHOTO BY WEBB CHAPPELL



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Laraine Rodgers, City of Phoenix

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Hank Leingang, Viacom International

Politically Correct Out-of-the-Box Thinking
Ken Harris, Kentucky Fried Chicken

**The CIO's Responsibility in Driving
Institutional Change**
David Kearns, Xerox Corporation (retired)

Whose Turf Is It Anyway?
Larry Grow, Motorola

**Internal Consultative Selling: Getting High
Ticket Technology Funding**
Mack Hanan, Greymatter Group

IT Humor: Who Gets the Last Laugh?
Rich Tennant, Editorial Cartoonist

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able. And since the Server 195 is completely upgradable—to PS/2 Server 295 specs—you can add subsystems to achieve a higher level of fault tolerance when and where it makes sense.

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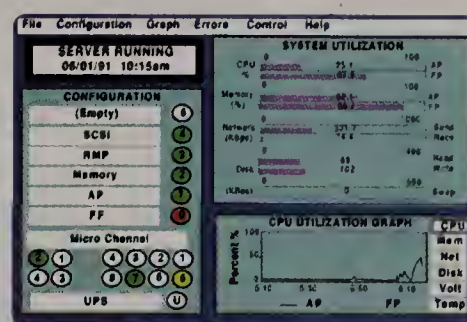


It even tolerates



MASS/2 works with a battery backed-up Remote Maintenance Processor (RMP) option that can notify you of errors, failures, corrective action

taken—even provide system access during a power failure. And you can extend fault tolerance to the entire disk subsystem by adding an Orthogonal RAID-5 Disk Array/2.



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Server 195/295 Comparison

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MASS/2	optional	standard	standard

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"EDI has come a long, long way from the modest goal of replacing paper purchase orders. Data sharing is the next, much-needed step up from EDI."

—Joseph R. Phelan
Manager of Supplier
Communications
Ford Motor Co.

This month's Strategic Outlook section concerns reengineering the IS organization, but I would like to focus my thoughts on another subject

explored in these pages—the new face of electronic data interchange (EDI).

The EDI leaders of yesterday are transcending the original concept of EDI. At leading-edge companies such as Ford and Motorola, the very processes EDI enabled have been eliminated, and new ways of conducting business, with names like "quick response," "dynamic inventory replenishment," "schedule sharing" and "evaluated receipt settlement," are taking their place.

It's called electronic commerce. And it's elevating some companies to extremely high levels of efficiency and productivity. This grown-up EDI phenomenon shifts to suppliers the responsibility for ensuring that the companies they serve have what they need, when they need it. In addition, manufacturers and retailers are becoming more savvy in linking expert systems and sophisticated market-analysis systems with EDI.

Take, for example, the relationship between Dana Corp., an automotive-parts supplier, and Ford Motor Co. Data sharing, in which Dana Corp. essentially peers into Ford's inventory databases, has enabled Ford's just-in-time manufacturing process to run smoothly and saves the automaker time, bother and money.

We hope the features in this issue, both the Reengineering IS Strategic Outlook and "EDI, Release 2.0," will inspire you to take a proactive role and effectively address your organization's business agenda.

Wynne L. Woz

P.S. Mark your calendars—the next CIO Perspectives Conference, "The Politics of IT: Reordering The Enterprise," will take place Oct. 17-20 at the Westin Mission Hills, Rancho Mirage, Calif. Please call our toll-free registration hot line at 800 366-0246.

Coming In CIO

MPP's Commercial Pioneers

Previously considered viable for scientific and engineering applications only, massively parallel processing (MPP) is making its way into the IS mainstream. More and more organizations are turning to MPP for its ability to "divide and conquer" their data-processing problems.

Dispersion Therapy

User departments have been clamoring for years to have IS decision-making authority pushed out to the business units. Once that happens, are users satisfied with the results? Do their relationships with IS improve? *CIO* asked some non-IS managers to assess their experiences in organizations where such dispersion has taken place.

Virtual Realities

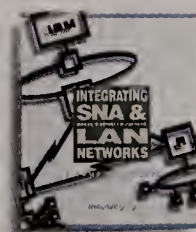
According to Bill Davidow, the future belongs to those "virtual corporations" that reorganize around rapid response to customer demand, forging tight relational and technological bonds with core suppliers and long-term customers. In order to get there, companies must replace their high walls and arms-length business relationships with more permeable interfaces between themselves and the organizations with which they do business.

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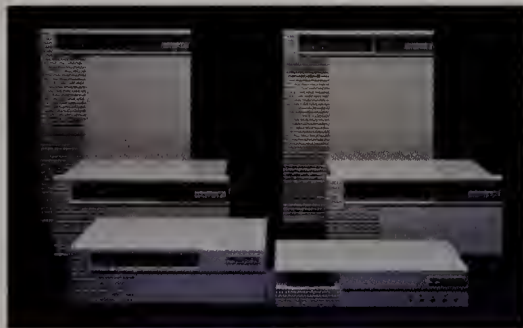


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TRENDLINES

YOUTH COMPUFEST '93

SUPPORT FOR CHILDREN'S PROGRAMMING

IS chiefs who bemoan the talent deficit among the current crop of college students should try setting their sights a little lower. Sixth grade, say.

More than 120 children, enrolled in grades K-12, entered projects in the third annual Youth CompuFest, held last month at the Lotus Development Corp. headquarters in Cambridge, Mass. The competition, which is sponsored by the Boston Computer Society and Lotus, awards prizes in a variety of categories, including art/print, games, education programs, animation and useful applications.

The object of the competition is to stimulate interest in computers among students and to introduce the general public to some of the child-centered software currently available. Children as young as 4 years old experimented with mice in the exhibit room, while their older brothers and sisters demonstrated their projects in the judging areas.

Many of the entries were computer-generated drawings ("I've been experimenting with perspective," said 9-year-old David Greenspan, who designed his cat and fish-tank image using Kid Pix from Broderbund Software).



MICHAEL YOFFA, 4, gets an early start.

Games were popular: Nathan Dern, 11, devoted three months to creating the first of what he hopes will be a multipart role-playing game using Claris Corp.'s HyperCard. Also on HyperCard was "WarpMaster," which 12-year-old John Rhoades described as "trying to escape from a video game that you've accidentally stumbled into."

Christopher Kern, 10, used Paradigm Software's Logo/Lego toolkit to design a Mac-powered robot intended to pick up and move small blocks. Unfortunately, the robot was not cooperating at the time of the judging. "The problem with working with Lego is that it's very inaccurate," complained Kern.

Others shared his sense of

frustration. Nigel Cooper, 16, chose Batman as his subject "for the glory of comic books." His first choice was Spiderman, "but I accidentally erased my own disk." And while Ryan Chen, 13, was proud of his Beauty and the Beast portrait, his other successful artworks "got wiped out when I accidentally hit the power switch."

Most of the participants interviewed said they were at least considering pursuing a career in computers, although as BCS committee member Joel Couch observed philosophically, "many are called and few are chosen."

Still, he added, "It's out of groups like this that will come the geniuses like the ones who created Lotus and Microsoft." ■

THE RIGHTSIZING STUFF

Rightsizing may be a relative newcomer to the corporate-computing vocabulary, but it has certainly captured the business world's imagination. Two-thirds of respondents to a recent Dun & Bradstreet Software survey said that 1993 will be a year of rightsizing or realignment of computer resources in their organizations. The study polled 1,100 IS professionals on a range of issues shaping the computer industry. Among the results were the following:

- Asked their main reason for rightsizing, respondents moving down from a mainframe or away from a proprietary system cited decreasing costs (46 percent) and increasing flexibility (44 percent). Of those organizations moving down from a mainframe, only 16 percent gave empowering end users as their primary reason.
- Respondents said the most influential forces driving automation were increased worldwide competition (28 percent), growing productivity (26 percent) and the need to cut costs (24 percent). Business-process redesign and continuous quality improvement both ranked low.
- Although Microsoft's Windows NT has not yet been released, 37 percent of respondents said they believe NT will offer benefits that are not yet available with Unix.
- Forty-one percent of the survey respondents said their organizations have moved to an open-systems environment. Asked the most compelling reason for switching to open systems, 64 percent mentioned increasing flexibility. But the benefits are likely to be felt principally within the organization: Only 8 percent selected customer service as their primary motivation. ■



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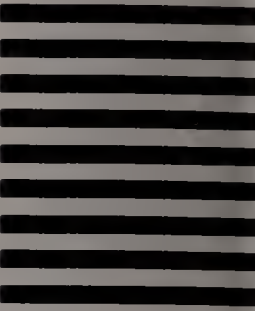
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TRENDLINES

HUMOR CONFERENCE

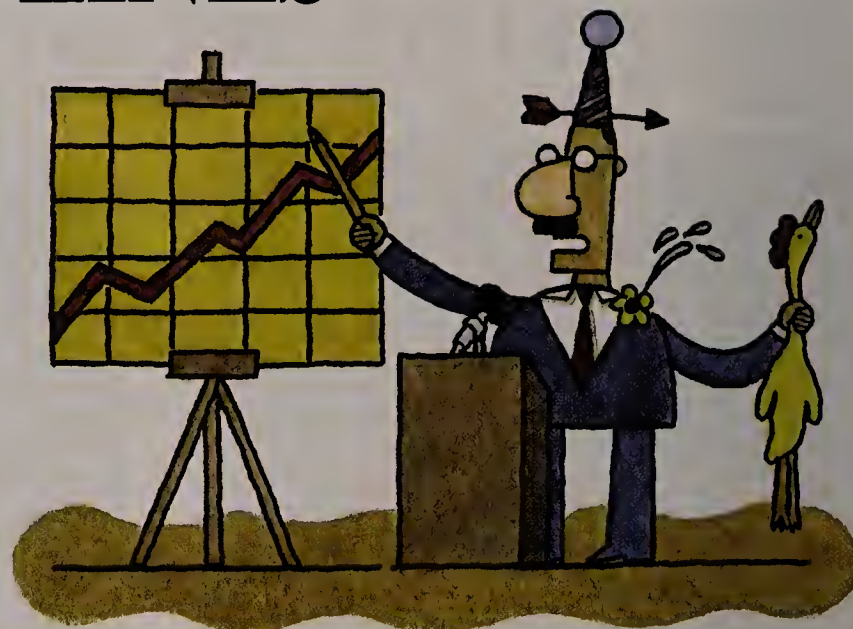
TAKE MY BUSINESS UNIT—PLEASE

Picture more than 1,000 conference-goers—all purportedly responsible adults—wearing funny hats, juggling neon-colored scarves, painting their faces and pigging out on ice cream. No, they weren't Shriners, but health-care professionals, educators and uncategorizables such as the editor-in-chief of *CIO* magazine attending the eighth annual confab on The Positive Power of Humor & Creativity, held in Saratoga Springs, N.Y.

Getting in touch "with the elf in yourself" and "turning ha ha to aha!" is serious business for The Humor Project Inc., an organization founded by Joel Goodman. At a time when downsized corporate environments require teamwork across a variety of disciplines, the organization's message—that humor fosters communication and plays an important role in the creative process—seems entirely germane.

Goodman and his cohorts managed to inject well-managed buffoonery into the weekend-long conference that kicked off with some inspirational humor from comedian Steve Allen. "There is nothing quite as funny as the unintended humor of reality," noted Allen. To demonstrate this principle, Goodman showed attendees how to break down barriers by searching out fellow travelers with whom they shared eye color, birthday month or a favorite TV show.

Peter Lind and Sean Greenwood, of Ben & Jerry's Homemade Inc., explained how the Burlington, Vt.-based ice-cream empire managed to keep its sense of fun in the face of its rapid transformation from a small, family-type company to a large, heavily automated manufacturer. Owners Ben Cohen and Jerry Greenfield believe that business has a social mission to improve the quality of life for employ-



ees. One way to do that, they believe, is to inject a little laughter into their lives.

So the company sponsors events like the Busted Hump Award, National Kazoo and Klash Dressing Days, and an Alan Alda birthday celebration. Lind and Greenwood advised conference attendees to find out what their employees think is funny and build events around it. A few things that tickle the Ben & Jerry's funny bone: Elvis, Spam and Slinkies.

Everyone likes to bring a

little something home from a conference, whether it's a coffee mug, a T-shirt or an autographed book written by a speaker. This time, attendees had more than the usual options as they shopped in an exhibit hall crammed with rubber chickens, Groucho Marx eyeglasses and fashion nose-wear.

Of course, not even a humor conference can be all fun and games. One of the speakers was actually heard to utter the word "paradigm" during a presentation. ■

GOOD FOR WHAT AILS THEM

While everyone is talking about the need to reduce health-care costs, the National Wholesale Druggists Association (NWDA) is actually trying to do something about it.

Working in partnership with GE Information Services, the Reston, Va.-based trade association has established HEALTHCOM, a dedicated EDI network that aims to lower the administrative costs of distributing medications by efficiently linking drug wholesalers and manufacturers. Since April, member organizations have been able to use the voluntary system for transactions such as purchase orders, invoices, bid awards, chargeback reconciliations and sales reports.

"We want our members to take control of their own EDI futures," said Bruce Siecker, president and CEO of NWDA Service Corp., the organization that owns and operates HEALTHCOM. "With this system, we've taken away every possible excuse for not using EDI." For example, HEALTHCOM can act as a gateway to alternative systems such as E-mail and fax, so members can reach trading partners that do not have EDI capabilities.

Eventually, databases for distributing information about individual drugs and processing contracts will be added to HEALTHCOM, which should lead to more administrative savings that can be passed along to consumers. ■

CAREER MOVES

The Information Systems division of Samsung Electronics America Inc. has appointed KEVIN KILROY vice president of marketing, sales and operations. In this position, he is responsible for overall management of U.S.-based computer and peripheral products. Also at the Ridgefield Park, N.J., company, TOM LEONARD, a three-year veteran of the division, was promoted to general manager, national distribution sales. As general manager,

he is in charge of field-sales personnel as well as the sales-support organization.

DON HARDER was appointed senior vice president of information technology at EMI Records Group North America in New York. He is responsible for supervising the development and implementation of technology and business systems for the company's North American operations. He joins EMI Records after serving 18 years with accounting firm Ernst & Young as a partner. ■

DOES YOUR INVENTORY HAVE TROUBLE FINDING ITS WAY?



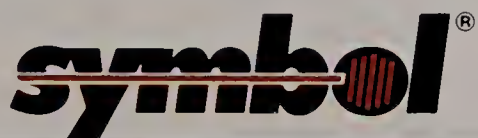
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When faced with the challenge of inventory control, many companies don't know how to get from point A to point B.

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TRENDLINES

AIIM SHOW

AN IMAGE MAKEOVER

Image processing is not overpriced, high-profile techno-wizardry; it's a proven procedure for bettering customer service and pounding out the kinks in a company's workflow. And now the price point is descending within reach of smaller organizations.

That was the message hammered home by the biggest image vendors at the annual Association for Information and Image Management (AIIM) show in Chicago. According to a Unisys Corp.-commissioned survey of senior IS and end-user managers at 28 firms, customer service has become the new competitive *raison d'etat* for investing in image-processing technology.

Coddling customers is key to retention, according to the study. Less than 20 percent of customers are lost because of dissatisfaction with price or product functionality; the real culprit is poor service. Retained customers increase in value more than threefold over 20 years, according to Tenex Consulting of Burlington, Mass., which conducted the research. On the other hand, the price for replacing lost customers, including marketing and administrative costs, can range from \$1,500 for a financial customer to \$100,000 for a legal client.

Workflow reengineering was also a hot topic at AIIM. IBM currently embeds workflow tools in its ImagePlus system, but company executives acknowledged that workflow will soon become a market all its own, independent of image technology—an opinion shared by vendors such as FileNet Corp. Recog-

nition Equipment Inc.'s Plexus group has already unbundled its workflow-ware from its image products. And Hewlett-Packard has chosen to ally itself with venerable workflow vendor Computron Technologies to gain a quick foothold in the workflow market.

Several vendors have stretched a hand down to the cost-conscious, smaller organizations that had previously been priced out of the imaging market. Digital Equipment Corp., in partnership with North American Philips Corp., unveiled MegaDoc, a budget-conscious image system aimed at smaller customers. Eastman Kodak Co. also pitched the penny-wise with its low-priced, write-once compact-disk authoring system. The CD is Kodak's first commercial application of its consumer Photo CD technology. ■

A CALL FOR NOMINATIONS

Carnegie Mellon University's Graduate School of Industrial Administration and American Management Systems are seeking nominations for the Sixth Awards for Achievement in Managing Information Technology. The program honors executives and professionals who have made outstanding contributions to their organizations, and often to their industries, through the effective use of IT.

The awards criteria evaluate not only the significance of nominees' achievements, but also their leadership role in developing the technology vision, managing the resources, promoting the process among senior management, and achieving project and organizational goals. Last year's winners included Bobby Martin of Wal-Mart, Peter Bloom of Salomon Brothers and Craig Goldman of Chase Manhattan Bank.

Nominations are due by July 30, 1993. Following an in-depth screening process, which may require on-site visits, winners will be selected in February 1994. An awards dinner and ceremony will be held in New York in May 1994.

Nomination forms can be obtained by contacting Jan Dodson at American Management Systems, 1777 North Kent St., Arlington, Va. 22209, 703 841-5830. ■

HE'S IN THE JOHN—I'LL TRANSFER YOU

Do you ever sense a presence hovering somewhere above you, watching every move you make? God? Santa Claus? How about PhoneVision?

PhoneVision, from Precision Tracking of San Antonio, Texas, lives in your company's ceilings and locates important personnel when the receptionist needs to transfer a call. Employees, typically those whose time

is most in demand, wear domino-sized tags that broadcast invisible infrared light. As they walk among various rooms, their position is automatically recorded and reported by a sensor network embedded in the ceiling.

When calls come in, the receptionist checks a color graphic screen depicting the building's floor plan to determine the person's location and transfers the call to the nearest extension.

The product can also be used to track vital, mobile equipment.

Rik Heller, president of Precision Tracking, said PhoneVision is posi-

tioned as an adjunct or alternative to area voice paging and voice mail. The product, which typically costs about \$10,000 for a 60-sensor system, is targeted at organizations whose staff members must be immediately accessible to their clients or customers: sales groups and hospitals, for example. So much for those afternoon trysts in the linen closet. ■



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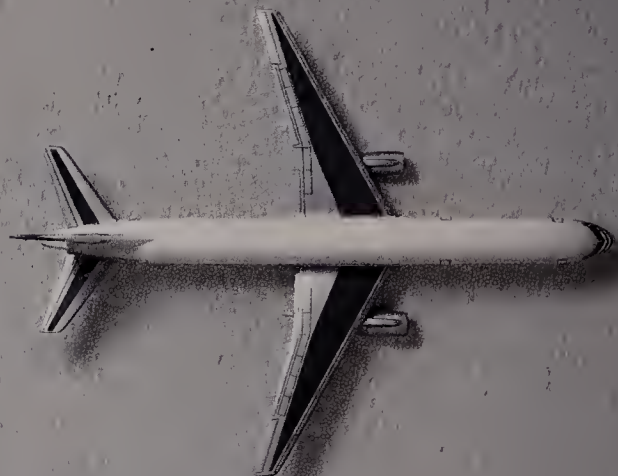
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TRENDLINES

IBM CONFERENCE

A MOSTLY FAVORABLE IMPRESSION

In an effort to connect directly with their customers, IBM executives met with about 170 influential information executives at a company-sponsored conference late last month in Chantilly, Va. New CEO Louis V. Gerstner Jr. set the tone by directing the company's top executives to be available to

answer customers' questions both in private meetings and during conference sessions, which our two reporting CIOs (who asked to remain anonymous) described as having a town-meeting atmosphere.

IS executives were apparently impressed with Gerstner's visibility and accessibility. He participated actively

throughout the three-day confab, mixing with attendees at coffee breaks and dinners. "He didn't have minions around him protecting him from customers," one CIO said. On several occasions, when Gerstner was not satisfied with answers provided by his executives, he pressed them to elaborate.

The information executives present asked a lot of tough questions. They wanted reassurance that Gerstner's plans did not include breaking the company up into smaller corporate entities that would continue to compete with each other, a tactic that has long created confusion among IBM customers. Such a breakup is not in the strategic cards, Gerstner reassured attendees. He also said that in the near future, the company would be adding 4,000 to 5,000 specialists in important target markets to the North American sales group, according to our sources.

Another frequently voiced concern was that IBM should take ownership for integrating systems across its various product lines—from the mainframe to RISC systems and AS/400 platforms. Customers indicated that they had put considerable effort into such integration activities, which they felt should be the responsibility of IBM.

While applauding the responsiveness of local sales organizations, IS executives faulted IBM for requiring its front-line employees to push customer requests back up a "militaristic" hierarchy for final decisions. IBM executives said there would be a commitment to empower local sales groups.

On the whole, information executives liked what they saw of Gerstner and indicated a positive feeling about IBM's approach. But they are still waiting to see results. "It's like turning an aircraft carrier around in the middle of the ocean," one executive said.



BETTER LATE THAN CLEVER

Most employees are long past the days when forging parental notes to excuse tardiness or absenteeism was considered age-appropriate behavior. But invention doesn't necessarily flag with the passing of years. Accountemps, a temporary-staffing service based in Menlo Park, Calif., recently asked 150 corporate executives to list the most unusual excuses they had encountered. Among the replies:

- "The wind was blowing against me."
- "A plane landed on the highway and blocked cars."
- "There was a bear in the street."
- "My favorite actress just got married—I needed time alone."
- "The lead dog for my dogsled died."
- "My husband's pet spider died, and I had to console him."
- "The engine on the yacht wouldn't start."
- "I felt it was better to sleep at home versus at the office."

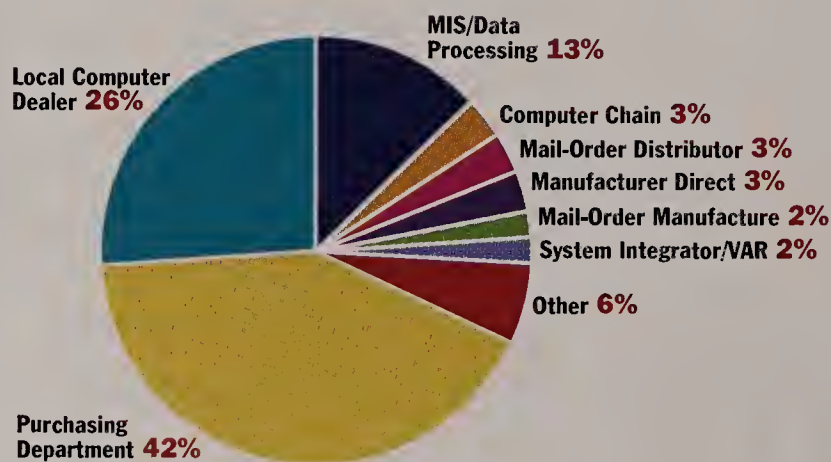
BUYERS BE WHERE?

IS may be many things, but a company's one-stop-technology-shopping source isn't one of them. According to a recent study by the Business Research Group in Newton, Mass., a large share of desktop-system purchases continue to be made outside IS departments.

The survey, of 500 professionals not in IS or data-processing functions, shows that nearly two-thirds either purchased their latest desktop systems directly from suppliers or ordered them through their purchasing departments. Only 13 percent acquired their systems through their companies' IS organizations.

These purchase patterns were similar for software and for the acquisition of systems upgrades and peripherals, including memory, operating systems upgrades, graphics boards, monitors and coprocessors.

Source of Last System Purchase



SOURCE: BUSINESS RESEARCH GROUP/NEWTON, MA

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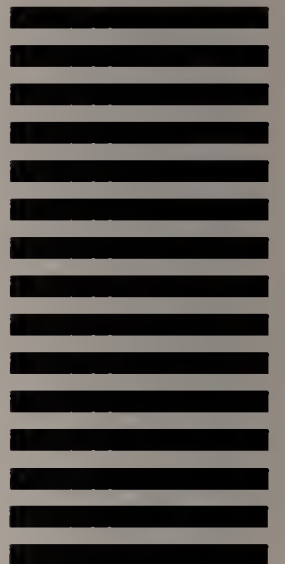
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Before Disaster Strikes

Runaway IS projects are a CIO's worst nightmare—and a fact of life at most large corporations. Using a few preventive measures, IS executives can ensure their new systems are viable, not liable.

BY JAMES A. WILLBERN

Derailed IS projects cost U.S. businesses billions every year. Circumstances vary, but the scenario remains the same: A much-vaunted, new information system is behind schedule, over-budget and spiralling hopelessly out of control. Once hailed as a catalyst for growth and profitability, the project has become a major liability. The bad news may be confined to the boardroom, or it may be the subject of lunchroom scuttlebutt. But a true "runaway" computer system inevitably makes its presence felt when it snarls up operations, imperils the company's reputation and damages market share.

An IS executive's worst nightmare, such runaways are a fact of life. Practically all large companies and organizations have experienced a runaway or are currently wrestling with a seriously botched project. It is chilling to note that current industry statistics indicate that IS project failures

outnumber successes 2-to-1. Even demonstrated technology savvy is an inadequate defense, as evidenced by AMR's \$165 million write-off on the Confirm joint venture last October.

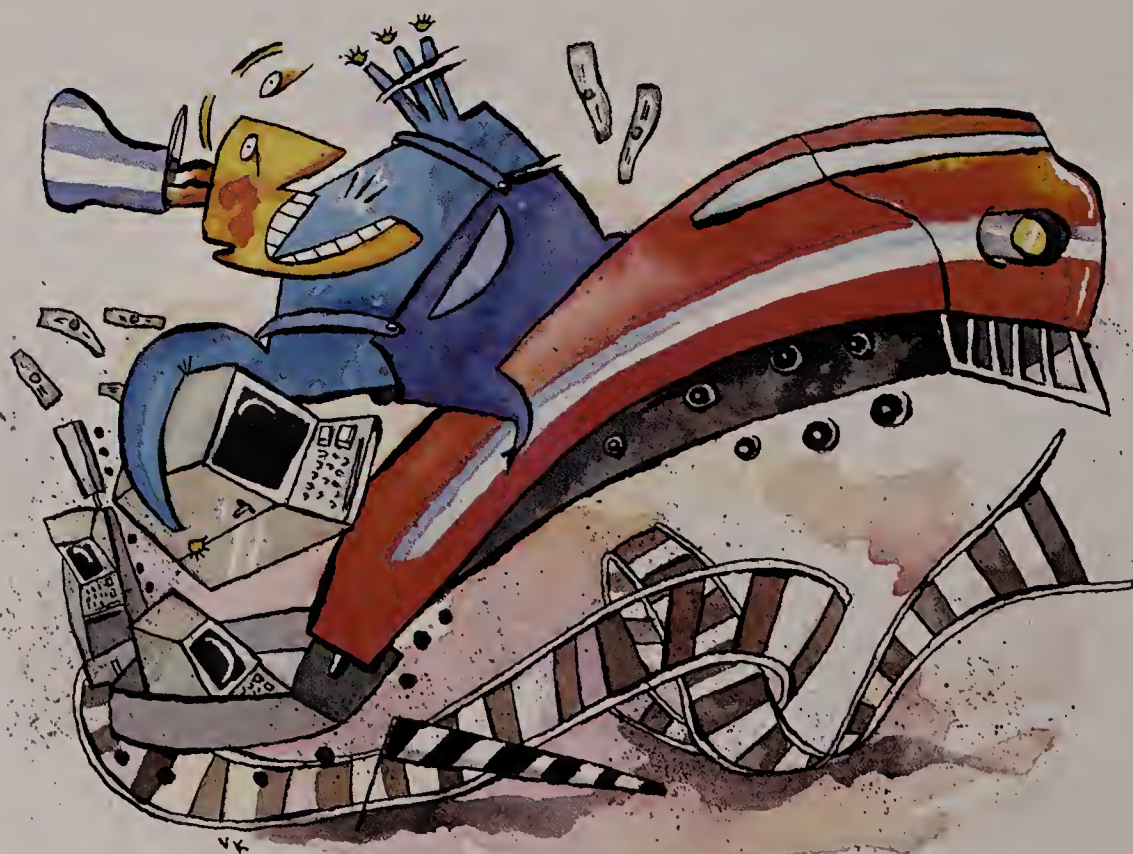
You might assume that runaways are usually caused by technology problems. Think again. Most are created by lack of project-management experience. Runaways tend to occur in corporations staffed with highly competent people who understand technology but underestimate the sheer magnitude of managing a complex project.

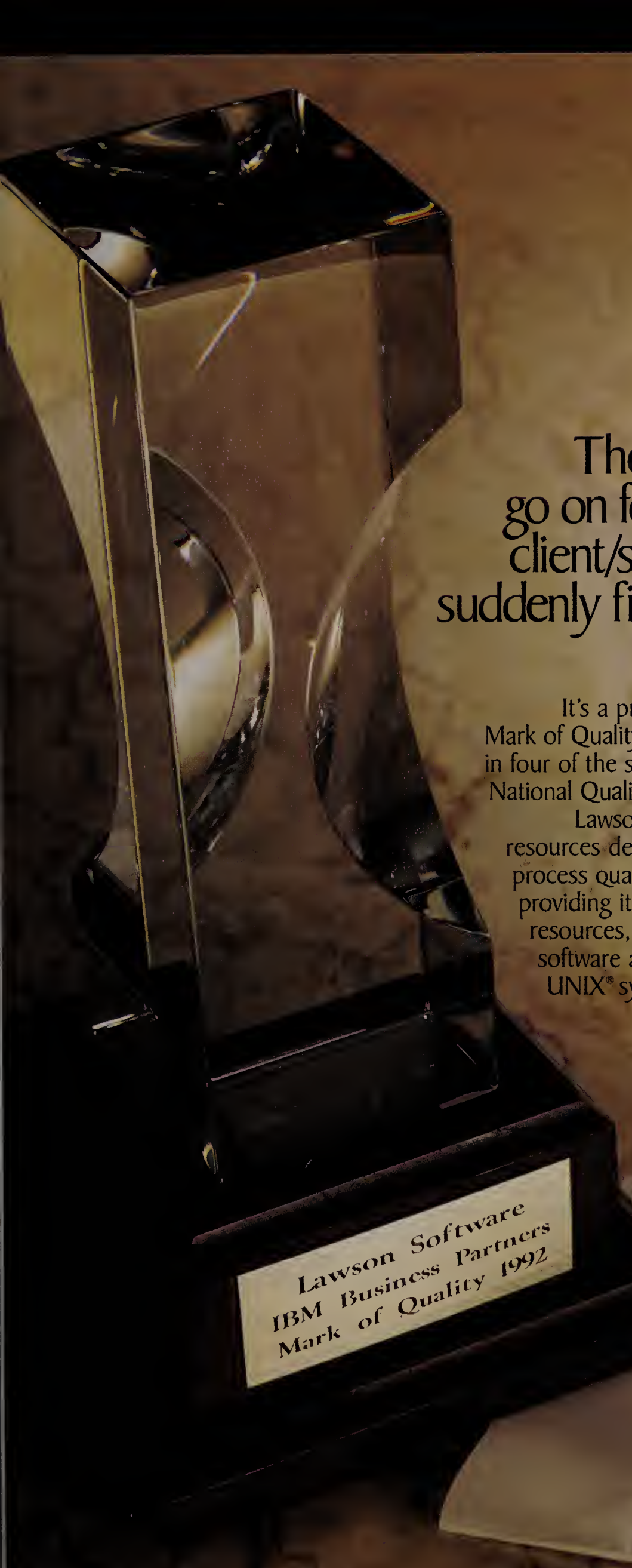
So much for the bad news. Can anything be done to improve these dismal odds? Yes, and it is heartening to report that an increasing number of CIOs recognize the importance of risk prevention and utilize it in their planning process.

In order to prevent projects from getting out of hand, you must first learn to recognize the danger signs. A project should be considered high risk if it is the largest ever undertaken by the organization; it is outsourced to consultants inexperienced with a project of comparable size and/or unfamiliar with the industry; it is highly integrated; leading-edge technology is involved; and/or the software being used is unproven in the industry and needs modification to meet your requirements.

After potential runaways have been identified, you can begin taking steps to avert catastrophe. The formula for success is simple: Invest time in detailed up-front planning; establish and adhere to a rigorous testing timetable; assign a seasoned IS professional to provide hands-on supervision of the project team's progress; get users involved from the very outset and make them part of the solution; and think "runaway prevention" from the very outset.

IS executives wishing to avoid the





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go on for days about rightsizing,
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most common technology and management pitfalls, uncovered by the Runaway Systems Management team of KPMG Peat Marwick in more than a decade of halting and preventing runaways, should make sure their projects conform to the following rules.

There is consistent hands-on supervision by a senior corporate executive. It is essential that a senior corporate decision-maker be assigned to manage and monitor the consultants and vendors and/or the system integrators from beginning to end. This executive must have the full support of top management, the authority to make decisions and the IS savvy to evaluate all stages of the project.

There is a detailed business plan/technical-needs assessment in place to accurately determine primary needs. Technology can provide the means for companies to differentiate their products and services within the marketplace. But in order to develop the appropriate technological solution to gain a competitive edge, an IS executive must be thoroughly briefed on corporate marketing strategy, the benefits the new technology is expected to provide, and the needs and requirements of end users.

The request for proposal (RFP) is sufficiently detailed. As a rule, it is wise to avoid any consultant or vendor prepared to bid on a general RFP. The time invested in developing a detailed document will eliminate inexperienced contenders from your review and minimize time wasted in lengthy presentations. Make sure your RFP includes schedules, acceptance criteria for each stage of the project, deadlines and reporting procedures. It's a good idea to request that contenders specify the number of individuals they propose to assign to the project and to discuss who pays for the learning curve if team members change midstream.

Vendor/consultant-hiring decisions are made on the basis of user needs and system requirements rather than on technology. One way to avoid being seduced by presentation glitz is to develop a formal decision matrix for selecting vendors and/or consultants. Be sure to include ques-

Subverting Murphy's Law

Since whatever can go wrong will, CIOs should review their projects for potential vulnerabilities

A pound of prevention is sometimes worth endless amounts of cure. In fact, in many cases of runaway computer systems, no cure at all is possible. Therefore, it is crucial that runaway-prevention measures be built into the project from the outset. IS executives must review and evaluate all aspects of the project approach. Before start-up, identify and assess each of the following for vulnerability:

- | | |
|-------------------------------------|--|
| ■ Business objectives | ■ Task management |
| ■ Strategic planning | ■ Proposal evaluation and contract negotiation |
| ■ Technical planning | ■ Technology selection |
| ■ Assessment of system requirements | ■ Measurable acceptance criteria |
| ■ Specifications | ■ Critical success factors |
| ■ Reporting requirements | ■ System-testing procedures |
| ■ Documentation and standards | ■ Proactive progress-report evaluations |
| ■ Timetable | ■ Sustained and effective project-management practices |
| ■ The RFP | |
| ■ Vendor identification | |

It is important to be realistic about your in-house capabilities when reviewing and critiquing each area for potential risk. Whenever possible, go outside your immediate team for an independent assessment. Better still, engage an independent, experienced IS professional with previous experience with runaway prevention who uses proven detection methodologies to assess the probability of a runaway. Battle-hardened veterans will spot the runaway red flags early in the project life cycle. Use their hard-won experience to your advantage. —J.A. Willbern

tions about testing procedures. Determine what risk-assessment/runaway-prevention methods are proposed, when they would be employed and how each contender proposes to deal with project volatility.

Scheduled "reality checks" are part of the process. Don't rely on optimistic forecasts or best-guess analyses. Facts are your friends. Good progress-to-date reports are no substitute for performance assessments and quality-assurance reviews. Conduct periodic reality checks and constantly track performance and costs against initial forecasts. Bypassing scheduled reviews may allow the project team to declare premature victory. Unchallenged acceptance almost

always leads to major additional costs.

Detailed strategic planning and thoughtful runaway prevention will always set you on the right course. Diligent project supervision will keep you there.

If your instincts suggest something isn't right, dig deep. Insist on straight talk backed up by factual reports and data. Remember, procrastination and downright denial turn fixable problems into million-dollar disasters every day. ☐☐

James A. Willbern is national director of KPMG Peat Marwick's Dallas-based Runaway Systems Management practice, established in 1983 to detect, manage and prevent runaways.

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REENGINEERING I.S.

THE ROAD TO RENEWAL

Though the gurus may split hairs over definitions of reengineering, all of the variants have in common a pivotal role for information technology. Unless the technology function restyles itself along more flexible, agile and responsive lines, it will fail in its role of supporting reengineering initiatives across the organization. Now that such initiatives are increasingly widespread, it behooves IT to get its house in order. In this special section, CIO profiles three journeys on the road to renewal.

Deconstructing the Status Quo

Just because things have been done a certain way since Hector was a pup, is that any reason to keep it up? Nope. Like the overall business enterprise, IS needs to take a hard, critical look at time-worn structures and strictures.

PAGE 32

Keeping Customers Connected

At Sprint, focusing on processes has improved billing and product development. Now fewer customers are hanging up.

PAGE 36

Coming Back from the Brink

A rebellion among internal customers caused the IS organization at Unisys to remake itself from the ground up.

PAGE 46

Getting into the Game

They say pain is the great motivator. But as leadership at J.M. Huber found out, sometimes people have to be convinced that they're really in distress.

PAGE 56



REENGINEERING I.S.

DECONSTRUCTING THE STATUS QUO

*Just because things have been
done a certain way since
Hector was a pup, is that any
reason to keep it up? Nope.
Like the overall business
enterprise, IS needs to take a
hard, critical look at time-
worn structures and strictures.*

BY LEW MCCREARY

Back in the late 1960s and early 1970s, there was a bumper sticker that summed up a popular anarchist attitude of the period: "Question Authority," it read. And in that exhortation, one could almost feel the cold stare of critical scrutiny aimed at dismantling everything safe, well-entrenched and conventionally wise—say, the military-industrial complex.

Reengineering may be the modern equivalent of Question Authority. If you look unflinchingly at an organization and deconstruct its processes to examine what lies behind them, you may find underpinnings that no longer deserve the authority they still anachronistically command. With the hideous sham now exposed, you can go forth and invent new processes that are rational, lean and computer-enabled, and that serve the modern competitive reality. (Since the impulse to dismantle dies hard, reen-

gineering is probably now being carried out by many of those same people who sloppily wrinkled that anarchist bumper sticker across the dented engine compartments of their Volkswagens.)

In thinking about reengineering, as long as you keep matters on a lofty theoretical plane, the concept makes terrific sense. It seems elegant, ambitious and courageous—and, in a way, straightforward or even simple. Oh, sure, you understand intellectually that it *isn't going to be easy*, despite the refreshing clarity of the radical vision of renewal. But until you get down to the level of, say, a cross-disciplinary working group deciding just how many whole departments and total jobs to cut, it's hard not to think of the organization as just a sort of larger Wankel engine.

The thing that has changed with reengineering in the past 18 months or so is that people are actually starting to do it, as opposed to being merely excited by the idea of thinking about starting to do it. And



it's not a Wankel engine, of course. It's a large human and organizational mess that costs a lot of money and presents a lot of opportunities to screw up—along with the fabled 10X improvements that justify the also-large risks.

Maybe a fat and happy organization sailing through blue skies of profitability and expansion *ought* to think about reengineering this or that process or positioning strategy. After all, blue skies can quickly vanish—look at IBM; look at DEC. But the many difficulties of the reengineering effort make it unlikely that any but the most intensely foresightful or clearly troubled organizations will trod the path.

Still, many are now trodding.... And among the trodders are IS groups that have unavoidably absorbed the message that their performance doesn't come up to snuff.

When your customers vote no-confidence

in what you do, that's a powerful inducement to start doing things differently. Many of the IS groups that have undertaken reengineering have done so because they faced a watershed competitive moment in which their business lives flashed before their eyes.

Consider the example of an IS unit attached to the marketing group of a very large service company. Inadvertently, and after the fact, the head of the IS unit learned that a request for proposal had been issued for an ambitious IT project—without the in-house IS unit being asked to submit a bid. "Gee," you might ask, "do you suppose they're trying to tell us something?" Yep. As it happened, however, the head of the IS unit insisted on bidding, won the contract and established a high-performance team to implement the new system. Result: happily awestruck customers in the marketing organization and, for the IS group,

WHAT HAS changed with reengineering in the past 18 months or so is that people are actually starting to do it, as opposed to being merely excited by the idea of thinking about starting to do it.

ILLUSTRATION BY WILLIAM RIESER

REENGINEERING I.S.

new skills and approaches, and the beginnings of a redeemed reputation.

In the following pages, we present profiles of three IS reengineering efforts. All three cases are different, but each shares a common focus on the role of IS in effectively addressing the organization's business agenda—in particular, by providing ex-

CONSIDERABLE ATTENTION MUST BE PAID TO REMAPPING people's attitudes and orientations—their intellectual, philosophical and even emotional relationships to work and to customers.

cellent customer service to its internal and external customers.

For example, Sprint, under Executive Vice President and CIO Ron J. Ponder, is retooling corporatewide business processes to help it become a keener competitor in the cutthroat telecommunications business. IS, which at Sprint both supports operational activities and plays a role in creating products, is only one piece of that effort. But what an important piece. At Sprint, the implementation of a client/server architecture lies at the heart of the company's overall reengineering effort. And behind the architectural transformation lies the imperative to do absolutely everything at Sprint with vastly greater speed, flexibility and economy (see Megan Santosus' profile, "Keeping Customers Connected," on Page 36).

The Sprint example calls attention to the paramount reason for IS to get its house in order: IT plays a central role in almost any reengineering initiative, no matter what its scope. No reengineering project will succeed without there being in place an effective technology-implementation infrastructure. If the IS group is mired in kludginess, its problems will ripple everywhere through the project.

In organizations where kludginess is entrenched, IS finds itself closed out of activities in which it ought to have a role. People in the line functions grow accustomed to looking elsewhere for technology solutions; disregarding the IS group becomes habitual and reflexive—and the organization as a whole suffers. In Mickey Williamson's profile of the IS-reengineering effort at a Unisys Corp. manufacturing unit in California (see "Coming Back from the Brink," Page 46), Bruce Taylor, one of those tapped to help trigger the turnaround,

was himself an accomplished end-runner. In fact, many at the Unisys division had learned to circumvent IS for all but the most mundane of services. IS Director Robert J. Leto faced an outright rebellion among internal customers, who saw IS as fatally slow, unresponsive and irrelevant. What ensued was six months of investigation and analysis that led to a "top-to-bottom" overhaul—undertaken with the significant participation of many of those disgruntled customers.

But even an absence of overt hostility from customers can't be taken as a sign that all is well. Sometimes the habit of doing without a dynamic IS contribution can become so ingrained that expectations are quietly, rather than angrily, notched downward over time. That was the case at J.M. Huber Corp., a New Jersey-based diverse manufacturer and natural-resources-management company (see "Getting into the Game," Page 56). In the climate of relatively low pressure that went along with the low expectations, morale in Huber's IS group was actually fairly upbeat—despite the fact that virtually no new application-development activity was occurring. The IS group had essentially meandered down a tranquil siding that took it out of play as a critical business factor. And yet IS minions were proud of their relatively responsive performance in making changes to systems already in place. Thus the challenge faced by Huber's vice president of the IS division, John Shiels, was to awaken his people to the need for serious change so that IS could roll back off its siding and begin to make a competitive difference.

The profile of J.M. Huber, in particular, highlights the human dimensions of reengineering that make the endeavor complicated and difficult, and importantly unlike a Wankel engine. Where theoretical discussions of reengineering fall down is by misleading the gullible into thinking that organizational structure and workflow are all that must change. But considerable attention also needs to be paid to remapping people's attitudes and orientations—their intellectual, philosophical and even emotional relationships to work and to customers. And that is where matters can bog down in pain and resistance.

It just also happens to be the venue where change is most solidly carpentered into a renovated culture. 



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REENGINEERING I.S.

PROFILE

KEEPING CUSTOMERS CONNECTED

Sprint Corp.'s process-improvement effort focused the company squarely on keeping its customers happy. Thanks to improved billing and time-to-market, fewer are hanging up.

BY MEGAN SANTOSUS

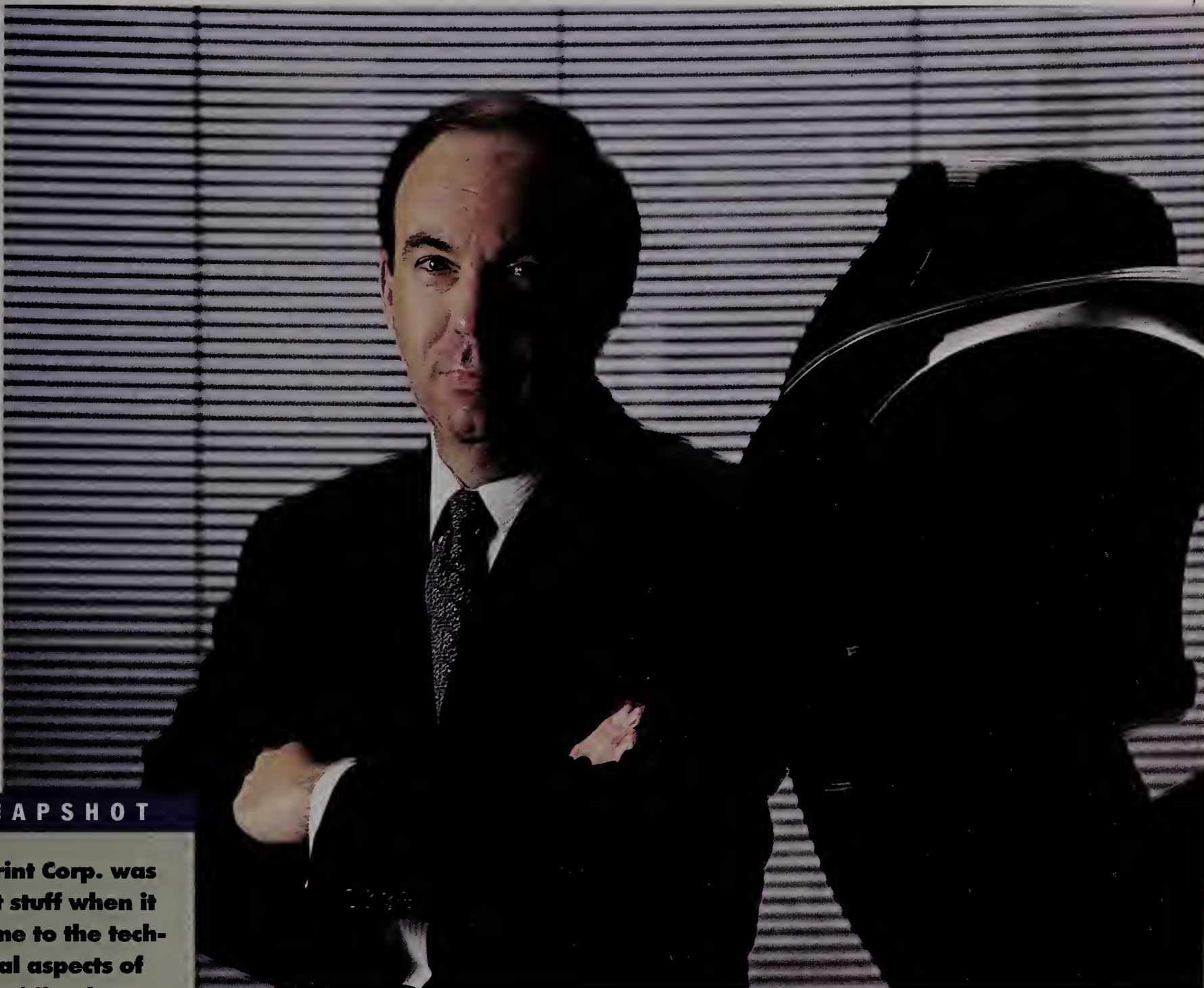
When it comes to satisfying its customers, Sprint Corp. faces the formidable challenge of making the extremely complicated long-distance telecommunications business look simple. Despite its considerable investment in state-of-the-art technology, Sprint knows that all the T1s, frame relays, fiber optics and X.25 packets in the world won't convince anyone to sign up as a customer if bills arrive late or service is disrupted. To ensure that its customers always come first, Sprint is in the midst of improving the business processes deemed to have the most impact on them. "Our philosophy is simple," explained Ron J. Ponder, executive vice president and CIO. "We should not be spending a lot of time working on things that don't keep a customer or get a customer."

With 1992 revenues of \$9.2 billion, the

diversified telecommunications company offers local and long-distance services, although most of the explosive growth of the last six years has been in the long-distance division. Sprint's wide range of products and services includes voice transmission, data networks, fax and E-mail messaging, videoconferencing, invoicing and reporting. A recent merger with Centel Corp., based in Chicago, will give the company a presence in the fast-growing wireless- and cellular-communications market as well.

With so much on its plate, Sprint is simultaneously coping with the growing pains of its current expansion and positioning itself for the future. During this past winter, the normal buzz at the company's Kansas City headquarters was frequently interrupted by the sounds of power drills and banging hammers, as construction workers labored to build additional office space. Employees took the inconveniences in stride, although such distractions could have been particularly stressful for a company whose slogan is "so clear you can hear a pin drop."

Less intrusive than knocking down walls—



SNAPSHOT

Sprint Corp. was hot stuff when it came to the technical aspects of providing long-distance service, but its customer-service operations had failed to keep up with the company's rapid expansion. An ambitious process-improvement drive produced 100 percent on-time billing, 40 percent faster product development and a significantly reduced customer-turnover rate.

RON PONDER: THE GOAL IS TO MAKE IT NEXT TO IMPOSSIBLE FOR CUSTOMERS TO THINK OF SWITCHING.

though considerably more important—is the enterprisewide process-improvement effort designed to rein in costs and make the company responsive to the needs of its customers. Three years ago, a formal quality program—highlighted by two layers of training for all of Sprint's then-43,000 employees—was established throughout every division of the company. That program has since become the backbone of the process-improvement drive.

The emphasis on customer service is particularly important in an industry where competitors aggressively try to entice business away from one another using well-targeted pitches. Under these circumstances, customer loyalty is a reliable indication of success. "Customers really do vote with their feet," said Ponder. "We want our services to be so good that it will be hard for

customers to leave us."

While analysts agree that Sprint leads the industry in technology (its 23,000-mile, all-digital, fiber-optic network and deployment of Signaling System 7 were industry firsts), the company's marketing and customer-service operations have historically been less well-regarded. This was especially true during the late 1980s, when Sprint's long-distance division went from a startup to \$6 billion in about six years. Its billing systems strained to keep up, and customer service faltered as invoices often arrived late, error-filled or both.

In 1990, IBM and Hitachi mainframe-based systems were built from the ground up to improve the accuracy and timeliness of billing. With a fairly robust application portfolio in place, legacy systems (including rating, customer service and order-en-

REENGINEERING I.S.

"YOU HAVE TO get a good feel for the front lines and the back-office processes that affect them. Doing this means involving all levels of management and having a keen understanding of the entire organization."

-Ron J. Ponder

try as well as billing) did not need significant attention, so Sprint has devoted most of its efforts to making business processes quicker and cheaper. When Ponder was hired in January 1992, one of his mandates was to align IS with the business in support of overall process improvement.

Ponder already knew a thing or two about implementing IT to support the objectives of a rapidly growing business. Before arriving at Sprint, he headed up IS at Federal Express Corp. in Memphis, Tenn. Under his guidance, Federal Express introduced a variety of innovative technologies, such as worldwide package-tracking systems and wireless networks.

Although he had no experience in the telecommunications industry, Ponder nevertheless found himself in familiar territory when he got to Sprint. The intensely competitive atmosphere and the emphasis on service and time-to-market helped him feel at home. "I'm comfortable with the pace and the hurly-burly that's going on here now," he said.

Ponder also brought along some ideas about what it would take to improve the situation at Sprint: a new way of looking at the organization that stresses processes rather than functional lines. By thinking horizontally and across multiple functions, managers can identify information links and flows among processes, he argued.

"This is very hard to do because it means fundamentally changing how a company does business," Ponder said. Companies organized into functional, largely independent departments must learn to work collectively and collaboratively. "You have to get a good feel for the front lines and the back-office processes that affect them," he said. "Doing this means involving all levels of management and having a keen understanding of the entire organization."

At Sprint, for example, product development was typically performed as a series of isolated functional handoffs. The sales department determined a need in the marketplace; the new-product idea was passed along to product management for refinement and then to product development for requirements. IS didn't come into the picture until the new product needed coding.

"The functional approach to product development created all kinds of opportunities for missing the translation because IS was four steps removed from the customer,"

said Gary Forsee, a senior vice president in the Long Distance Division. As part of the company's new customer focus, functional barriers were removed, resulting in a product-development process that is collaborative, integrated and involves IS from the beginning.

As a result, Sprint has realized an average 40 percent improvement in product-development time. A recent example is "Business Clout," a long-distance program for small businesses that offers varying discounts depending on phone traffic. It took 60 days to develop and roll out, compared with the 40-week schedule that it would have taken before process improvement. "The Most," a product for residential customers, was introduced in just 100 days.

Sprint is currently focusing on redesigning and improving 13 processes that are especially important to the customer and represent a significant portion of the long-distance division's costs. These "value points," as the company refers to them, affect every aspect of the customer relationship, including product development and delivery, sales and order-processing, invoicing and customer service. Sprint is also re-vamping those processes that can help the company cut costs.

Each process is entrusted to an officer—the business-unit executive heading up the effort—who maintains "ownership" of it for three years. Officers manage, support, measure and report all activities that pertain to their particular process. Once a month, they get together in an all-day session to compare notes and assess where the overall effort stands.

According to Ponder, it is very important that progress be documented and publicized every six months so that employees know they are heading in the right direction. "It's also very important that results are measured and that the measurement criteria are consistent for all processes," he said.

Implementing a client/server architecture is an integral part of Sprint's process-improvement effort. Customized applications run on OS/2-based workstations, and CASE tools and shared information warehouses are used to improve productivity and effectiveness. "We're taking our existing systems to the next level by adding a lot of functionality," said Rod Mack, manager of systems development for long-distance services. "The systems we develop are also

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Network Systems

REENGINEERING I.S.

products, so quality and speed to market are particularly important."

The management process for developing systems and getting them into production is known as a release. As many as 10 products are bundled together in a single release, which represents 200,000 person-hours of development. Every quarter, Sprint aims to roll out one release, and three are in development simultaneously.

Since building new billing systems and implementing process-improvement efforts, Sprint has realized a number of significant benefits in customer service. Every bill in 1992 was sent out early or on time. Thanks to a client/server architecture, customer-service agents can now perform billing inquiries or check the status of large accounts in about 45 seconds, compared with the 24 hours it previously would have required to print and analyze the information. Using the invoice-processing system as a foundation, customer-service agents review accounts every six months to ensure that customers are signed up for the most appropriate service.

"We were losing customers because they weren't on the right calling plan," said Mack. "With periodic account reassessment, our agents can make sure customers are on the plans that will save them the most money." As a result, the customer-turnover rate, or churn, is "down substantially," according to Ponder. Since each percentage point of churn corresponds to roughly \$500,000 in revenue, Sprint's attention to improving customer service has significant implications for the bottom line.

As complicated as Sprint's networks and systems are, Ponder finds that keeping employees focused on the objective of customer service is the most challenging part of his job. Communicating the process-improvement message to all employees—including the 3,000 in IS—is a constant priority.

But that's easier said than done, especially considering the disparity between what customers demand and what the company must do to meet those demands. Essentially, all customers want is to pick up a phone, hear a dial tone, make a call, get a quick and clear connection, hang up and receive an itemized bill.

From a service-provider's perspective, however, the process is far from simple. Itemized bills require a high volume of trans-

action processing. On an average day, Sprint processes 90 million records containing every characteristic (date, time, duration, point of origin, destination) of a phone call. Each month, Sprint is notified in advance of 75,000 incidents of digging or other events that could threaten a cable and disrupt service.

And a wayward backhoe isn't the only threat to continuous service. At Sprint's Network Operations Control Center, administrators keep one eye on monitors and the other on CNN and the Weather Channel because such events as the riots in Los Angeles and Hurricane Andrew can cause regional service disruptions. Even Garth Brooks can clog lines when his concert tickets go on sale. Consequently, Sprint's nationwide network contains hundreds of alarm points. These alert administrators to any problems that might necessitate rerouting or blocking service.

Sprint goes head-to-head with AT&T and MCI in long-distance communications services, a \$60-billion-plus market. Stiff competition in this industry—for both residential and business customers—is based on price, product selection, reliability, quality, flexibility and customer service. "The way to compete ultimately comes down to marketing," said Bruce Roberts, an assistant vice president and telecommunications analyst at Brean Murray, Foster Securities in New York. "The key to gaining long-distance market share is using information to generate profitable revenue growth."

For example, the long-distance market is segmented in terms of profitable and unprofitable customers. Since it takes a certain amount in monthly charges to justify the costs associated with billing, companies don't want to spend marketing dollars on low-usage residential customers. By analyzing usage, calling patterns and churn rates, companies are constantly developing and targeting a wide variety of services and calling plans. The entire process is information-intensive and complex, another reason why integration across functional departments is so important.

As the number-three long-distance carrier, Sprint has room to gain market share, and Ponder is prepared for the long haul. "Process improvement is gradual and ongoing," he explained. "We're not going to rest until we have the best processes, systems and services on earth, so our brethren in the telecommunications industry better watch out." 

"WE WERE LOSING customers because they weren't on the right calling plan. With periodic account reassessment, our agents can make sure customers are on the plans that will save them the most money."

-Rod Mack

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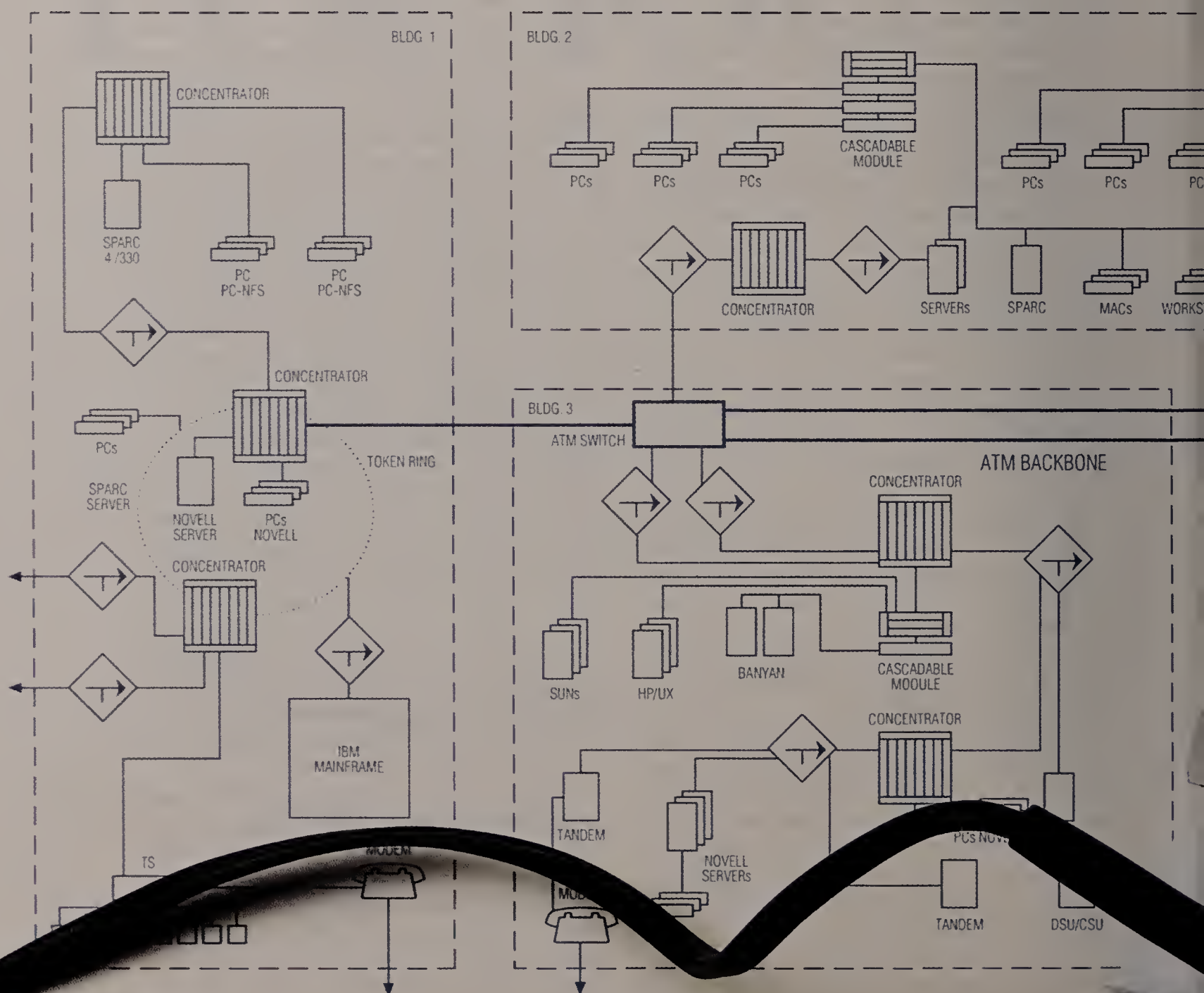
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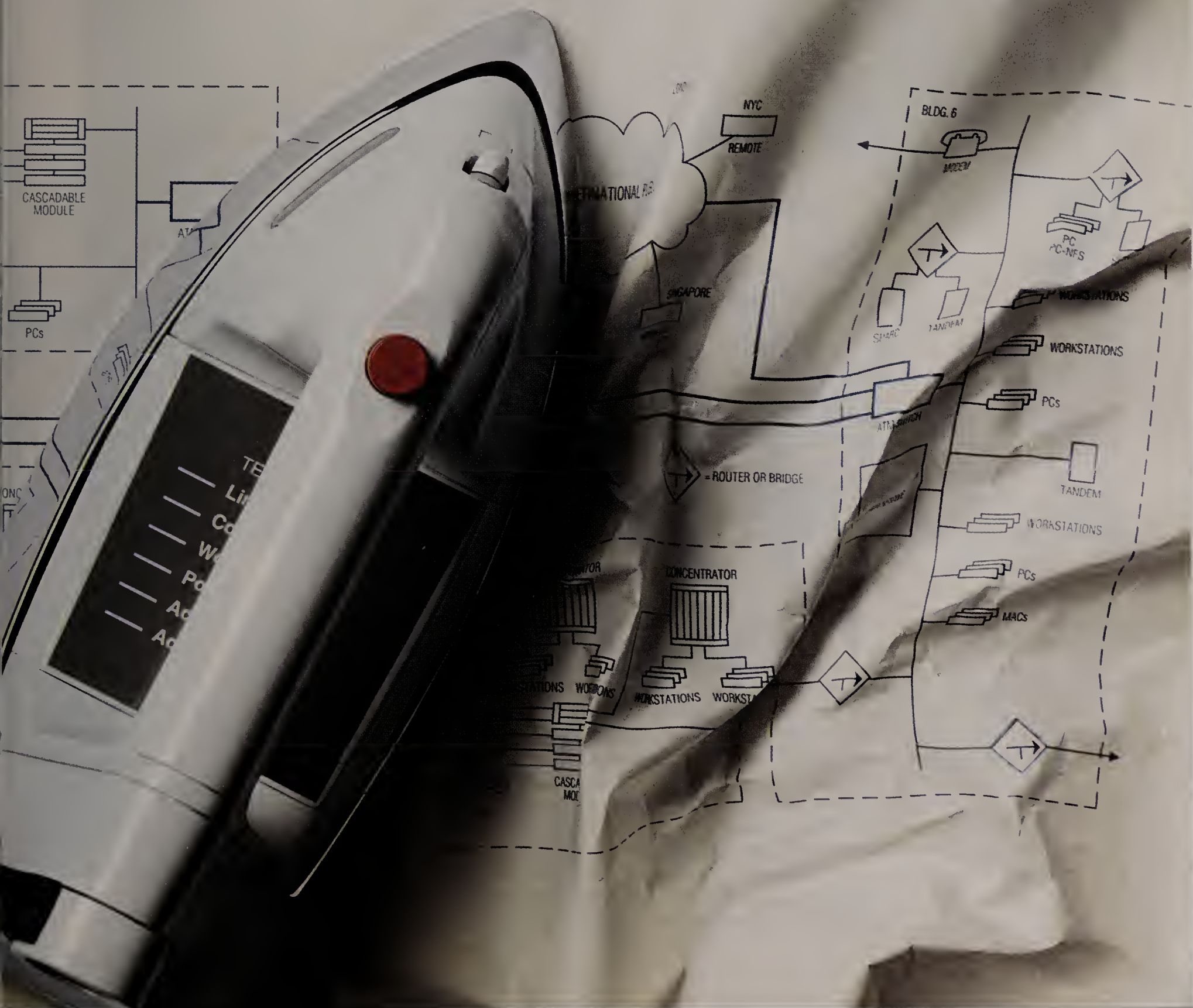
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REENGINEERING I.S.

PROFILE

COMING BACK FROM THE BRINK

At Unisys, an IS overhaul has changed the organization's image. Where once it was reviled as obstructionist, it now has the full support of user management.

BY MICKEY WILLIAMSON

When his managers offered him a new career opportunity early in 1991, Bruce Taylor was suspicious at first. Production control manager for A Series computers at Unisys Corp.'s Orange County Operation (OCO) in Mission Viejo, Calif., Taylor had worked in the IS department before switching over to manufacturing in 1985. Six years later, he had become adept at bypassing the IS organization to obtain in-

formation he needed, going so far as to hire a local college student to write report programs for the manufacturing department.

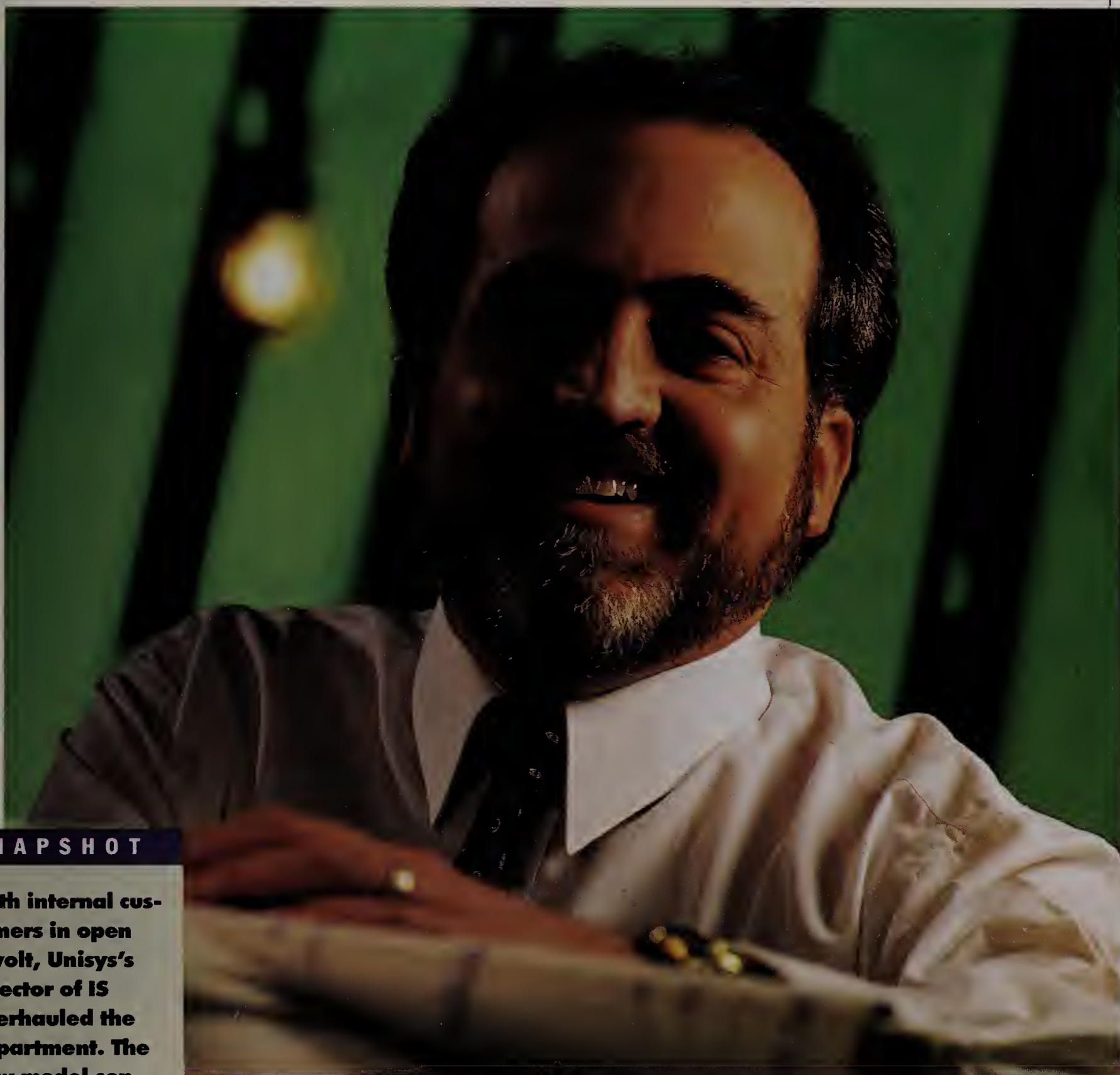
"We used to joke that we'd see the MIS managers once a year, when they came out to try to cancel our work requests because they were too old to work on," Taylor said. Joking aside, the manufacturing people tended to ignore the IS department. "We felt that they weren't adding any value to us and that they worked for someone else in

the organization. In fact, we strongly suspected that the people they were doing all the work for weren't even in our plant."

Now Taylor was being asked to head an IS team right in the manufacturing department. "I wondered if MIS was looking for people who knew the operation to bail them out," he said. After negotiating with Robert J. Leto, director of IS at the OCO, Taylor and his supervisor, Product Line Manager Dan Abalos, agreed to give Leto's proposal a try.

Leto wanted to station IS analysts in the manufacturing unit, where they would work with an equal number of people from that group to satisfy the department's information needs. "We wanted to make sure that the analysts were really working for us—that we had control over our own destiny in selecting projects and deciding what to work on," Taylor said. Taylor got a new title—manager of information and control systems for manufacturing operations—and, with it, responsibility for helping build a new partnership between IS and the user community.

Leto had no illusions about his depart-



SNAPSHOT

With internal customers in open revolt, Unisys's director of IS overhauled the department. The new model consists of an information-resources center, an advanced-technologies group and systems-analysis teams in user departments. Today user management is downright boosterish.

ROBERT J. LETO: "I HAD MY USERS AND MY PEERS DEFENDING THE I.S. BUDGET FOR THE FIRST TIME."

ment's reputation on the business side of the OCO. "We could be characterized as a typical IS organization," he said: buried in maintenance requests, under constant pressure to do more with fewer resources. "Our backlogs were not good in terms of delivering solutions to our internal customers. We'd get requests fired over the wall from the user community." The person on whose desk a work request landed would get to it as soon as possible, but "we were pretty reactive. There was never much time for true analysis or design work."

Leto's epiphany came during the fiscal

1991 budget cycle, when he asked his fellow directors for support in getting the IS spending plan approved. Bob Eichers, director of manufacturing operations, told Leto the blunt truth. "I said, 'Bob, you need to understand something,'" Eichers recalled. "'Other than maintaining the data center, you don't give me anything. I'm not going to back you for any resources.'" Moreover, Eichers told Leto he intended to hire his own IS person in hopes of solving some of manufacturing's critical business problems. "I think Bob got some of the same feedback from others."

PHOTO BY STEVE NIEDORF

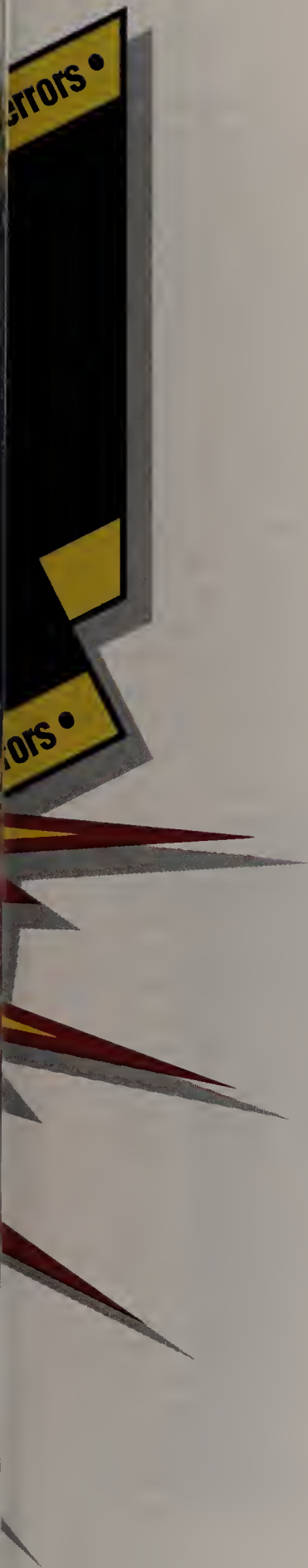
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REENGINEERING I.S.

"OUR IS FOLKS needed business understanding, and our business folks needed IT-tools understanding, and we were going to cross-pollinate these organizations for the betterment of both."

-Bob Eichers

He certainly did. Faced with flat-out rebellion among his customers, Leto and his staff began to hold strategy sessions, "brainstorming ways in which we could overhaul the internal IS group from top to bottom," he said. There were literature searches, surveys, focus groups with members of the user organization, meetings with human-resources people, interviews with members of the IS staff itself and visits to other companies that had undertaken renovations in the IS department. "We stirred it all up over about six months, and then we started hammering out what we thought the new look should be for the organization," said Leto, who now serves as director of process improvements and business reengineering in Roseville, Minn., helping Unisys with corporatewide business-reengineering efforts.



BOB EICHERS (LEFT) AND BRUCE TAYLOR CONCENTRATED ON INTEGRATING I.S. STAFF INTO THE USER COMMUNITY

Leto and his staff came up with the design for a nimble and responsive IS department: an information-resources center would handle communications networks and services and provide a help desk for end-user support, and an advanced-technologies team would explore network strategies and open-systems architectures and focus on IS process improvements, computer-aided software engineering (CASE) tools, and development techniques.

Leto needed his peers' cooperation to implement the third part of the plan: cross-disciplinary business-systems-analysis teams physically located in the user departments. It was time to take his plan on the road and find support in the business areas.

He visited the departments one by one, presenting his ideas and challenging his listeners to get involved in reorganizing IS. "I asked, 'Does this make sense to you? Are you willing to sign up to this? And oh, by the way, if we're really going to move our applications people into your area, we're expecting equal contribution to these teams.'" It took about 10 months of planning and selling, but eventually everyone signed up. Starting with the departments most willing and able to provide members for the analysis teams, Leto rolled the reorganized IS function throughout the OCO.

Leto pointed out that corporate management had provided the framework for this new approach to information technology services several years earlier by instituting the Unisys Total Quality Process program, the company's version of total quality management (TQM). "We already had a culture of continuous improvement, team building and consensus decision-making," Leto said. "All of the people skills generally associated with total quality were already in place. I tell anybody who asks that I would not have attempted this without that backdrop."

Eichers readily saw the value of Leto's plan. "Our IS folks needed business understanding, and our business folks needed IT-tools understanding, and we were going to cross-pollinate these organizations for the betterment of both," he said. By February 1992, the manufacturing-operations IS team was in place, and Eichers began calling periodic meetings at which team members and manufacturing managers would agree on development priorities.

Beginnings are difficult, and this one was no exception. "The first couple of meetings were pretty shaky," Eichers said. "We didn't know how to facilitate an IS group, and they didn't know how to deal with these businesspeople." Unaccustomed to absolute deadlines and rigid cost constraints, the technical half of the team was in culture shock. Taylor, the team's manager, was charged with helping the IS people integrate themselves into the user community. "At first they felt a little iso-

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lated, being lost in 'userland' without the rest of the analysts around, so we had to break through that and forge new friendships," he said. "We spent a lot of time together, getting out on the floor and introducing people, and going to lunch together."

Taylor set up projects in a way that required maximum contact between the IS analysts and end users. The TQM approach made people on the production floor "a lot

BY THE TIME LETO MOVED TO THE ROSEVILLE FACILITY in the fall of 1992, new projects were being delivered two-and-a-half times faster, he said, and maintenance and support were consuming about 30 percent of available hours, down from 70 percent.

more trusting, a lot more willing to realize that the reason people want to know about their jobs is to help them do it better rather than to grade them on their performance," Taylor said. "We still have areas to work on. [IS] people still get a little nervous about just walking up cold to somebody and saying, 'Hi. What do you do?'" But, he added, the user community no longer thinks of IS as a separate organization. "The teams on the [manufacturing] floor have no problem inviting [an IS member] to their quality-circle meetings," he said. The teams detail a process for that person so IS "can figure out how to reengineer it."

By the time Leto moved to the Roseville facility in the fall of 1992, new projects were being delivered two-and-a-half times faster, he said, and maintenance and support were consuming about 30 percent of available hours, down from 70 percent. None of this reduced the backlog of requests, "but it got stuff through the pipe faster," Leto said. "When we first put the teams out there, we took a big swat at our backlog. Then, after three or four months, [users] became aware of the value of the teams, the pipeline got bigger, and they stuffed more requests through it."

One byproduct of what Leto terms "this grand sociological experiment" is that the application analysts have "picked up a very acute business sense just by sitting out there [among the users] and listening to the hall talk. They are able to provide solutions that are much more on target than in the old days." At the same

time, now that users own their systems, Leto reported far fewer priority changes and project suspensions. This is because users are able to make better decisions and because they are allocating their own resources to solve the problems, he said.

Leto reassigned the data-center supervisors and turned management of the data center over to the operators themselves. They do all the inventory planning for supplies, schedule their own maintenance and run the machines. "They absolutely love it," Leto reported. "You couldn't keep those guys out of the data center on off-hours and weekends."

Today, Eichers gives the reorganization a score of seven or eight on a 10-point scale—"and definitely climbing." He ticked off a list of projects that never would have happened under the old system and said, "I'm positive that it's the only way we could continue to support an IS organization. I also think that the whole process of reengineering everything has to go even faster. Three, four or five months is way too long. We need 30- to 60-day deliverables."

Leto's plan may not yet have achieved perfection, but it withstood a major test during the 1992 budget cycle. "Things were tight, as usual, and I was having difficulty achieving my targets," he said. At a meeting with the other directors, he offered to disband the teams and reduce the application-development staff to help meet his budget goal. "The user management all stood up collectively and said, 'Don't you dare do that. We'll help you achieve the budget numbers in other ways.' So I had my users and my peers defending the IS budget for the first time since I can remember," he said with clear delight.

His suspicions fully laid to rest, Taylor could hardly be happier about the reorganization. "It's fun," he said; "we have a great time. That's what keeps me here." Referring to Unisys's well-publicized merger pangs, Taylor continued, "We've gone through some tough times as an organization, and people have asked why I don't go somewhere else." But there's no place else he'd rather be. "I get a chance here to make a difference," he said. "I've never seen an opportunity as big as this, and a lot of other people see it, too." CIO

Mickey Williamson is a technical journalist in Warwick, Mass., who specializes in emerging technologies. She heads the Qwerty Group.

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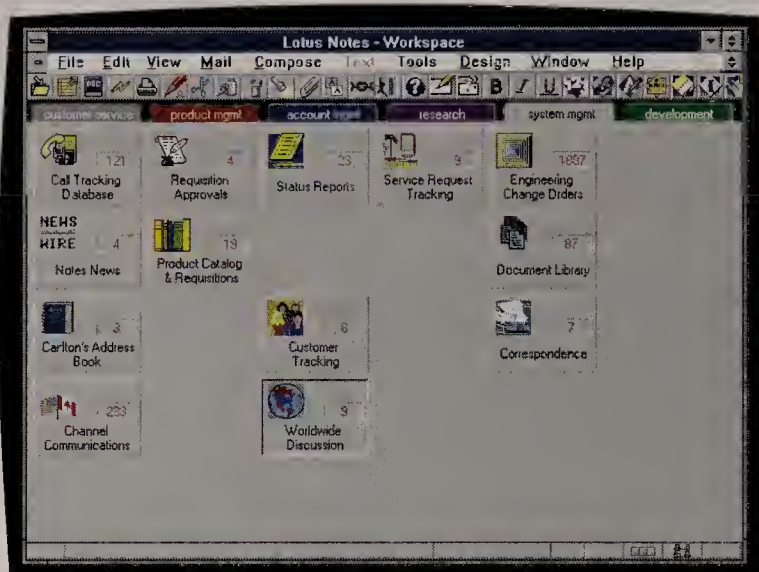
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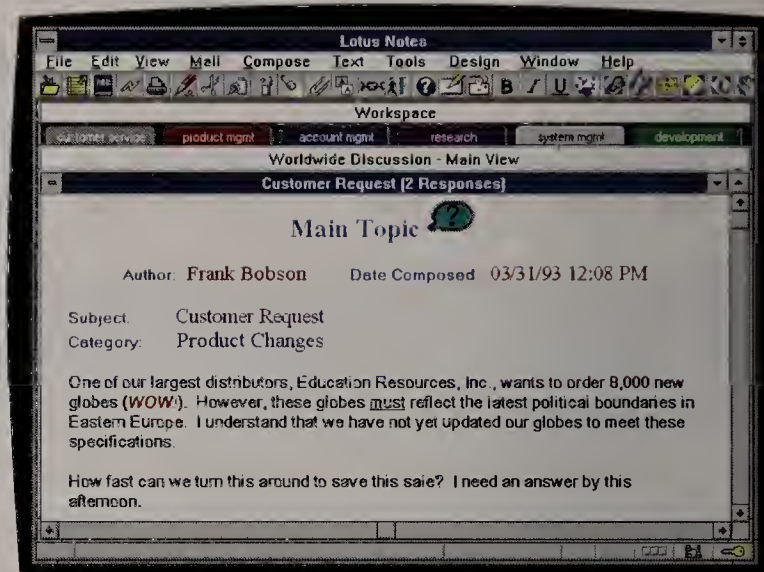
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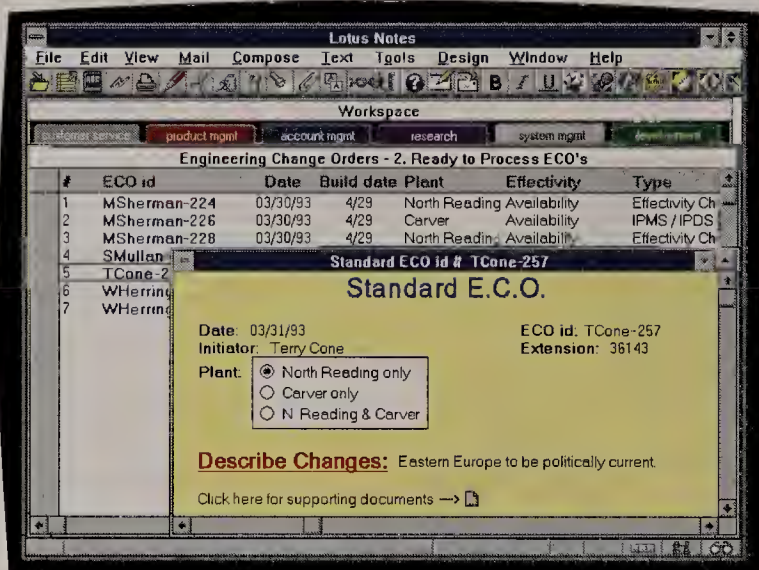
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1. This is James' Notes desktop. He uses it to access information and work quickly with people in all departments to solve problems worldwide. James clicks on the Worldwide Discussion application to catch up with important company news. The SmartIcons across the top make it even easier to work in Notes.



2. The field rep in Texas is working on a request from a customer. But to make the sale the product, in this case a globe, has to be changed to reflect the most up-to-date countries and borders. And evidently time is critical. The competition must already be in there pitching.



5. Once he has the information, he clicks on the Engineering Change Order application to request specific product changes from the plant in North Reading. He links the supporting Newswire information to the E.C.O. It will be easily viewed with a single click of a button.



6. After lunch he opens a document from Ellen, in product development, who has responded with the necessary changes, and scheduling information. The new art was scanned directly through Lotus Notes: Document Imaging from the art department. James approves the art for manufacturing.

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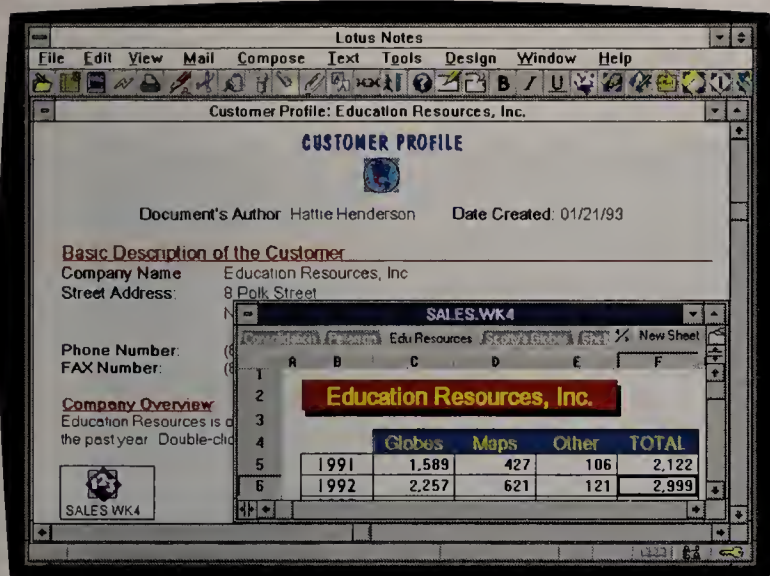
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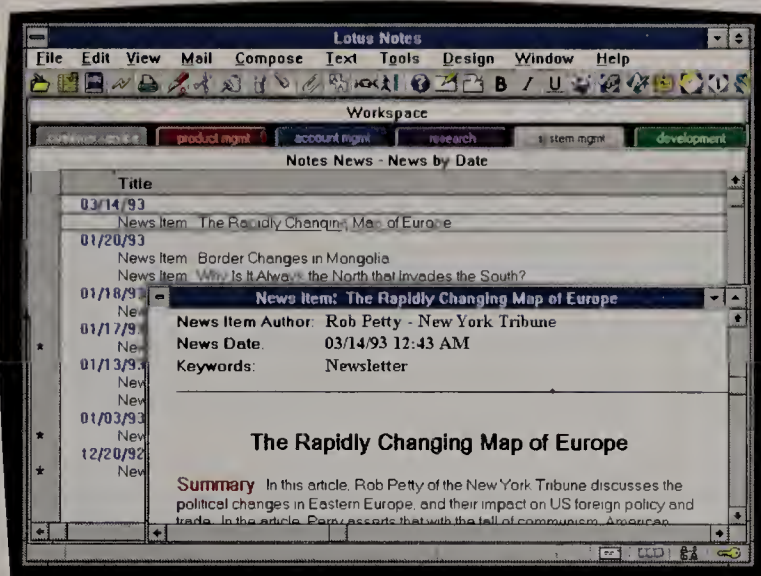
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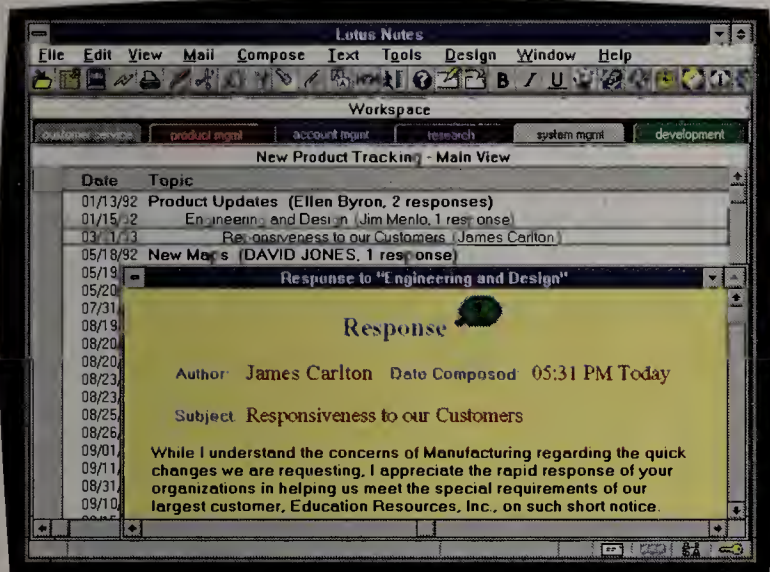
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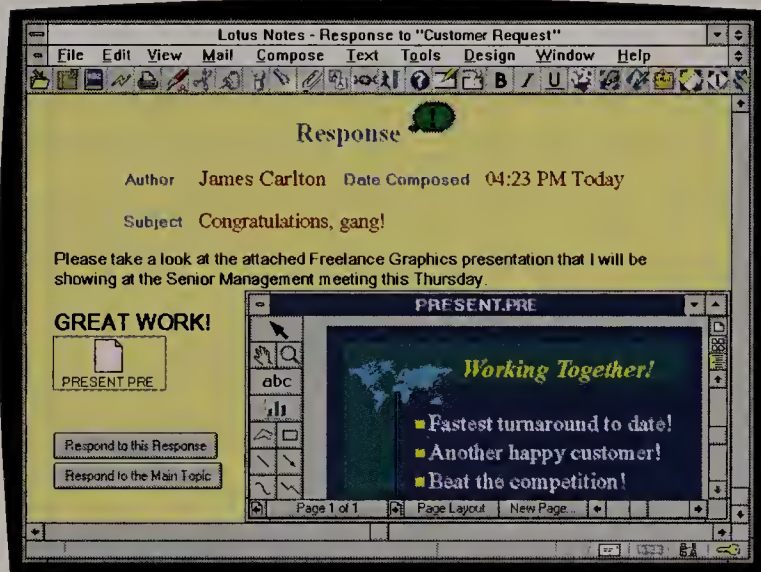
3. He clicks on the Customer Tracking application to learn more about this customer. The profile includes an attached 1-2-3® spreadsheet. He double clicks the icon to open the spreadsheet and finds that Education Resources is a very large customer that pays its bills.



4. James' next step is to click on the Newswire database for the most up-to-date report on precisely what geographical changes will have to be made on the new globe. And just how extensive they'll be.



7. On the Product Tracking application, all departments involved have confirmed that they can meet the schedule. However, they've cautioned James to be careful about rushing schedules in the future. James uses the Discussion database to acknowledge their comments and thank them for their efforts.



8. Wanting to record and promote the team's accomplishments, James puts together a presentation for senior management in Freelance Graphics. Then he posts the presentation in the Presentation database so everyone can see how the team rearranged the world to save a big account.

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REENGINEERING I.S.

PROFILE

GETTING INTO THE GAME

For years, the IS organization at J.M. Huber was mired in complacency. It has taken strong leadership to foster change and get its staff out of the doldrums.

BY MICKEY WILLIAMSON

Denis Malley, director of planning and administration, had been at J.M. Huber Corp. for 21 years when John Shiels came on the scene in June 1990. Senior management at the diverse manufacturing and natural-resources-management corporation in Edison, N.J., had hired Shiels as vice president of the information services division in the hope that he would revitalize an organization Malley described as "stuck."

"We were the typical IBM mainframe glass-house environment, reacting to [requests for] modifications and enhancements on legacy systems," Malley said. New development had practically come to a standstill—not that the department's 57 IS professionals wanted it that way. Faced with a dozen conflicting agendas from the company's largely autonomous business units and lacking the leadership that might mediate among these competing demands, "we couldn't coalesce the agendas into a proposal that made

economic, business and technological sense," Malley recalled. "We were too fragmented."

Even so, the IS department was an upbeat place to work, Malley said. The staff was proud of the speed with which it responded to requests for changes to existing systems and felt good about its relationships with the business units. The request backlog was about six months, at a time when consultant James Martin was reporting that the average IS department had requests backed up for 61 months.

But the lack of demand on the IS department by the business units seems to have been the product of low expectations rather than customer satisfaction. "Our customers pretty much figured that they weren't going to get anything new, so they didn't ask for a lot," Shiels said.

This situation is all too common among IS shops, according to Cliff Hallberg, managing principal of Interpersonal Technology Group (ITG) Inc. Shiels brought in the Lynbrook, N.Y., organizational-change management consulting firm to help reengineer J.M. Huber's IS department. "If you had



SNAPSHOT

Three years ago, top management at J.M. Huber became convinced that IS had an important role to play in revitalizing the company. Now IS is moving out of its reactive, mainframe-based glass house into the fast-paced environment of open systems, where flexibility and responsiveness are musts. Change is never easy.

JOHN SHIELS: "OUR CUSTOMERS FIGURED THEY WEREN'T GOING TO GET ANYTHING NEW, SO THEY DIDN'T ASK FOR A LOT."

asked the business managers how important the IS department was [to their organizations]," Hallberg said, "most of them would probably have answered, 'Not very. We need them to make sure that the general ledger is running and things like that.' But they wouldn't have seen information technology as critical to their business success."

Recession stalked the land when Shiels came on board, and the privately held company had seen profit margins shrink to a level that failed to satisfy its shareholders. Around the same time, management was signing a contract with the consulting arm of Arthur Andersen & Co. (now Andersen Consulting) for a strategic study that was

supposed to point the way to improvements across the enterprise. Work on the study was not to begin until Shiels, a seasoned veteran of strategic IS-reorganization projects, had settled into his new job.

One result of the study was a reorganization in the executive suite, including the hiring of two group vice presidents. One oversees the five divisions that have the most in common in terms of customers, markets, product-delivery logistics and, not incidentally, information systems. The other does the same for five units with highly divergent needs. The remaining two J.M. Huber companies have their own IS departments and look to corporate IS only for support of corporatewide functions.

PHOTO BY PETER VIDOR

REENGINEERING I.S.

"WE HAD BEEN thinking, 'If it ain't broke, don't fix it.' This was exposure to a message that says, 'It is broke. If you don't fix it pretty soon, it's going to fall apart.' "

-Denis Malley

From the IS department's standpoint, the reorganization had two salutary effects: It demonstrated senior management's commitment to significant change, and it provided leadership that would get the divisions talking to each other about systems needs and their relationship to common goals.

The Andersen study also led to a strategic plan for the IS organization that involved getting off the IBM mainframe in favor of open systems running on IBM RS/6000 RISC workstations at the division level, replacing corporate financial and office-automation systems and establishing advisory councils in the business units to guide the IS department in serving the company's needs. Turning an experienced mainframe staff into skilled supporters of a Unix-based operation would be no trivial task, Shiels realized. That's where consultancy ITG came in.

ITG proposed conducting a skills inventory and introducing a cultural-change program in IS in order to instill a new set of values as well as communication and customer-service skills. The program, which was conducted in six half-day sessions, began with a staff meeting at which Shiels set out some blunt truths. "I told them that business was changing very rapidly, technology was changing very rapidly, and if we were to be successful as a corporation, then IS had to change also—to become partners with the business in applying technology to meet business requirements," he recalled. The message, Malley said, was "hard to hear. I think most of us perceived that we'd been through 20 years of change and [thought of ourselves as] change masters."

Shiels also sent Malley and others in the IS department to seminars on business reengineering, leadership and competitive advantage put on by CSC/Index Inc., management consultants in Cambridge, Mass. Malley said he and his colleagues did not immediately grasp the relevance of these sessions to their department's situation. "At the time, we felt we were up to our ears in alligators, and I don't think we established the connection," he said. "We were going to have to spend three days away [from the office], then come back and dig out from under and catch up. Who needed that?"

But the message sank in nonetheless. "We had been thinking, 'If it ain't broke, don't fix it,'" Malley said. "This was exposure to a [message] that says, 'It is broken. If you don't fix it pretty soon, it's going to fall apart.' "



Shiels was aware of the prevalent reaction at the kickoff meeting. People showed their resistance by sitting with their arms folded, he said, "making you wonder if they were going to believe you." Still, he was convinced that "most of the people, down deep in their hearts, knew that changes were needed. They wanted to learn. They wanted to grow, and once they perceived this as an opportunity for them to do so, they came on board very strongly."

Taking inventory of individuals' skills was a necessary but potentially unsettling part of the program. Knowing that education and training in the new technologies would be required, Shiels had ITG lead the department through a process of defining the skills

J.M. HUBER'S DIVERSIFIED OPERATIONS INCLUDE THE PRODUCTION OF PLASTICS (TOP PHOTO), WOOD PRODUCTS (ABOVE RIGHT) AND PRINTING INK.

that were required for each position and then assessing where each individual stood in relation to those skills.

Staff members completed a self-assessment form, ranking themselves on a three-point scale. Their managers did the same. Then, managers and employees compared notes and resolved any differences in their assessments. "That was a very powerful tool," Shiels said. "If it hadn't gone any farther than that, it [still] would have paid off because of the way that it opened up avenues of communication between manager and employee."

Mindful of the fear that such an appraisal can inspire, Shiels did two things to maintain calm. He let it be known that he was

undergoing the same assessment himself. And he assured the staff repeatedly that the purpose of the exercise was to find ways to raise the skill level of the existing staff—"that we were not interested in firing anybody, but we'd rather have them grow into the new positions."

A task force identified training programs for every required skill, most of them self-paced and taken individually. Thus, Shiels said, "when people have a deficiency, they not only know they have it; they

also know how to correct it."

From their different perspectives, Shiels and Malley agree that the program is succeeding. Shiels said he perceives "a lot more openness [among the staff]—more willingness to take a chance in expressing what they really think." The same openness extends to the relationship between IS and its customers. "They approach us much more frequently now and ask us to get involved in what they're doing," Shiels said.

According to Malley, the IS organization is, at most, 40 percent of the way to its goal, but he admitted that he is "a hard marker. We're heading in the right direction," he said, pointing to several significant achievements that give added impetus to the program. "We've laid out an architecture for our hardware that is 180 degrees from what we've been comfortable with. We've ditched the IBM mainframe environment and committed to an open Unix environment. We have installed our first fi-

nancial applications; we have formed teams with the business units—which is a first—and established the fact that they are the real owners and the real drivers of the [systems] that we are going to put in. We are

FIVE YEARS FROM NOW, SHIELS ENVISIONS AN I.S. department that is organized to be both flexible and fleet of foot, "with teams that come into being to perform a specific task or project and then revert back to their functional homes."

working with them in a consulting role instead of the old way, where they threw a requirement over the fence and expected us to fill it."

Shiels has taken pains to encourage innovation and risk-taking. He does not expect perfect performance. "I tell people that we'll have some slippages, two steps forward and one step back," he said. When teams come to him with recommendations, if he can't see anything in them that will be harmful to the overall effort, he approves them, even if he might prefer some other approach.

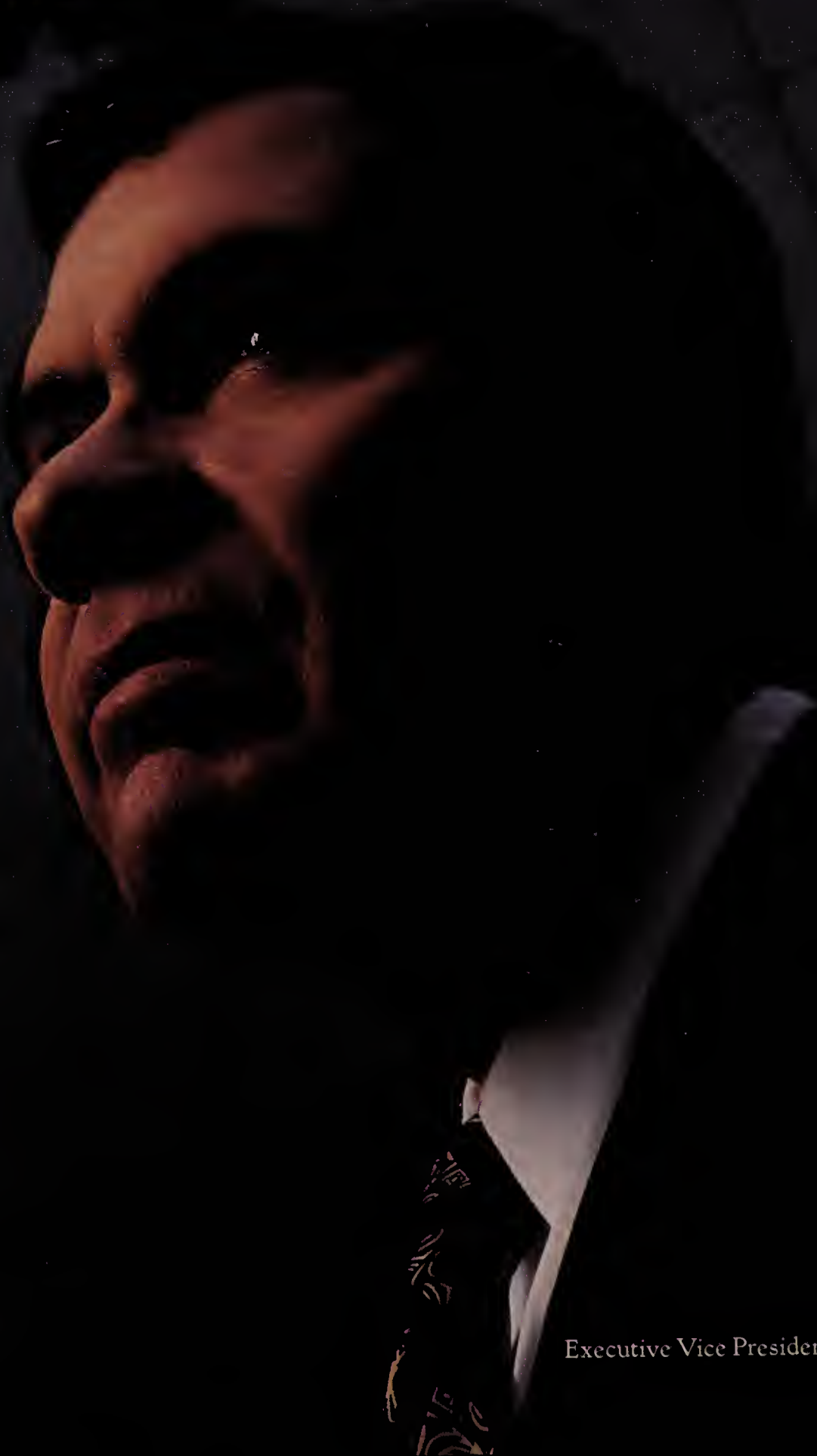
Management still tends to show "more stick than carrot," Malley reported, but he sees the attitude toward risk relaxing as economic conditions improve. "There have been real examples of gutsy action backing up the message that we should take more risks," Malley remarked. He pointed out that George Schenk, the company's president and CEO, endorsed the IS department's five-year reengineering plan with the comment that he would not hold the department to its initial cost estimate.

Five years from now, Shiels envisions an IS department organized to be flexible and fleet of foot, "with teams that come into being to perform a specific task or project and then revert back to their functional homes," he said. "Individuals may be working on three, four or five projects at one time." Shiels's advice to others who want to develop similar agility in their own IS organizations: "You've got to have the time and the patience to help people understand what you are about, to transmit the vision to them. It won't happen quickly. You'll probably have to say it six times before they see and believe it." 

Mickey Williamson is a technical journalist in Warwick, Mass., who specializes in emerging technologies. She heads the Qwerty Group.



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EDI

RELEASE 2.0

The EDI leaders of yesterday are taking advantage of new ways of doing business electronically to enable JIT manufacturing, consumer-purchase tracking and a shift of responsibilities to the supplier

BY ALLAN E. ALTER

FOUR OR FIVE TIMES A DAY, employees at Dana Corp., a \$5 billion automotive-parts supplier based in Toledo, Ohio, dial into an IBM mainframe at Ford Motor Co. in Dearborn, Mich. Their mission: find out whether they need to ship more automotive parts to Ford.

Dana employees—schedulers and material managers—call up a menu listing the parts they regularly supply to Ford and start checking. Is Ford experiencing any parts shortages? How many parts does Ford have on hand? How many parts is Ford using per day? How does that compare with historical usage?

Then they make some decisions: Send another 106 drive shafts; ship 73 tie-rod assemblies; no need to for-

ward any universal joints. In five or 10 minutes, the search is done. Thanks to electronic data interchange (EDI), the parts will soon be shipped, usually the same day, to the plants that need them, and Dana has rung up some additional revenues, according to J. Mark Baker, the company's network services manager.

But wait a minute—is this really EDI? Unlike conventional EDI systems, no electronic purchase orders, invoices, purchase-order acknowledgements or changes have been exchanged. No one at Ford, not even

place. In both light and heavy manufacturing industries, the EDI leaders of yesterday are transcending EDI today. Analysts even have a buzzword for the post-EDI phenomenon: electronic commerce.

FORD, WHICH BEGAN ITS EDI program in the late 1960s to early '70s, provides a good vantage point from which to consider the evolution of electronic commerce. "We started out in the transportation and the material end of the business, then expanded

ping notices, instead of invoices, as the basis for paying suppliers.

According to Phelan, this is about as far as conventional EDI has gone or can go. EDI systems simply exchange information in predefined formats; they cannot exercise judgment or anticipate problems. "We operate on such a tight schedule of material in a just-in-time environment that there isn't much time to react to a problem when it occurs," said Phelan. "The more time-sensitive our suppliers can be to our needs, the better they can respond."

That's where data sharing comes in. First instituted at Ford in 1991, it provides suppliers with the information they need if parts shortages occur, for example, if parts are damaged at the Ford plant or a delivery isn't made because a truck breaks

"It's like the bread man. Nobody at the store orders bread. The bread man comes in and puts the bread on the shelf."

—Joseph R. Phelan

its computers, has ordered parts or is even aware that the automaker needs them.

What Ford has done is open its database to Dana. The move keeps Ford's just-in-time (JIT) manufacturing process running smoothly and enables Dana to save the automaker time, bother and money.

Joseph R. Phelan, Ford's manager of supplier communications, is an old pro at EDI and believes the traditional form of the technology still has a role. But "data sharing" as he calls it, is the next, much-needed step up from EDI. "It's like the bread man," Phelan explained. "Nobody at the store orders bread. The bread man comes in and puts the bread on the shelf."

At Ford and other companies, electronic descendants of the bread man are usurping EDI applications. It's not so much that EDI is being supplanted by other technologies or bundled with them. Rather, the very processes that EDI enabled have been eliminated, and new ways of conducting business—such as quick response, dynamic inventory replenishment, evaluated-receipt settlement and schedule sharing—are taking their

EDI to support our JIT programs," said Phelan. Ford uses conventional EDI to send suppliers a weekly "material release"—a plan listing the material requirements the company anticipates in the coming months. Suppliers send electronic shipping notices to Ford listing all the materials that are on the way, and when and where they will arrive.

"If the supplier does the shipping job right, we don't have to go through an elaborate receiving process," said Phelan. "We just get the trailer number, pull the electronic shipping records, book the shipment" and send the materials to the assembly line. "We don't have to count and inspect," he said.

In addition, Ford has expanded EDI to support its payment process to suppliers. Known as evaluated-receipt settlement, this process was described by Michael Hammer in his celebrated 1990 *Harvard Business Review* article on reengineering: By paying for shipments upon receiving electronic confirmation that the supplier's goods had arrived, Ford eliminated a sizable chunk of its accounts-payable function and did away with invoices. Ford now uses electronic ship-

The Next STEP

.....
A new standard for product-data exchange could transform EDI—and manufacturing as we know it

Joseph R. Phelan, manager of supplier communications at Ford Motor Co. in Dearborn, Mich., is looking forward to the next big step in the evolution of EDI. When that occurs, products will be represented by a standardized data model—a logical, universally understood digital representation that describes a part's dimensions, function, material composition and manufacturing processes.

The data model would free EDI from the "fill-in-the-blanks" format of paper forms. Residing in a database, it could obtain the information sup-



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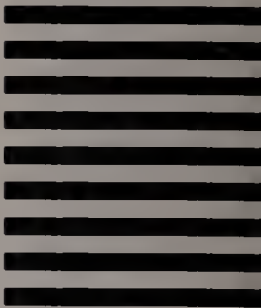
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down en route. In this way, Ford shifts responsibility to its suppliers. "Basically, we stop doing their job," said Phelan. For example, the supplier—not Ford—now takes responsibility for ensuring that Ford has the parts it needs, when it needs them—right up until the car rolls off the assembly line. This gives suppliers "a much more active interest in the whole business," Phelan said.

THESE INITIATIVES, THOUGH more advanced than other versions, are not unique to Ford. Most of the electronic components procured by electronics manufacturer Motorola are obtained through a similar schedule-sharing arrangement that allows the company's suppliers to peer into Motorola's inventory databases. And Boe-

ing has instituted evaluated-receipt settlement, according to Aubrey S. Jones, the EDI program manager at Boeing Computer Services.

But data sharing and evaluated-receipt settlement far from exhaust the possibilities of electronic commerce. Volvo GM Heavy Truck Corp. of Greensboro, N.C., for example, sends an engineering-specifications file between 500,000 and 3 million characters long to Dana every working day. It not only tells Dana what parts need to be built but supplies specifications on how to build them—for example, where to drill holes in frame rails, according to Baker.

While this application is run separately from Dana's conventional EDI hookup to Volvo GM, some firms—petroleum companies in particular—are finding ways to build combined

EDI/E-mail networks. Others—notably automakers—have begun to send computer-aided design (CAD) data and drawings via EDI, according to David Taylor, vice president in charge of the Inter-Enterprise Systems program at the Gartner Group, an information-technology research firm based in Stamford, Conn. Boeing will begin evaluating ways of unifying EDI, E-mail and CAD data ex-

The supplier now takes responsibility for ensuring that Ford has the parts it needs, when it needs them—right up until the car rolls off the assembly line.

pliers need to ensure an adequate supply of parts.

Efforts to create such a data model are underway, driven less by EDI than by the need to coordinate and share designs among parties involved in concurrent engineering. STEP (Standard for the Exchange of Product Data) is being developed by a consortium known as PDES Inc., with the cooperation of the National Institute of Standards and Technology in Gaithersburg, Md. A first release already exists.

But while Phelan sees STEP as a way to overcome the limitations of EDI, Dan Appleton, a consultant based in Manhattan Beach, Calif., thinks STEP spells not just the end of EDI, but of manufacturing as we know it.

It might begin with a company telling a supplier "this is how I want you to logically store your data" instead of "this is the EDI format I want you to use to receive and transmit data." Then, instead of ordering parts, a company might order the STEP data model for a part from one supplier, then transmit it to another supplier to man-

ufacture. Ford might even shop for the best data model from several manufacturers—if there are any traditional manufacturers left. Today's manufacturers could split into two categories: those that create and license data models to other companies and those that take the STEP data model and create the actual products to spec.

"Manufacturing will become intellectual property," said Appleton. "The winner will be the person who figures out how to make money off this before anyone else," and that could be the one who owns and licenses the models.

Others agree that this scenario is plausible. "There are people who just design automobiles," said Professor David M. Dilts of the University of Waterloo, Ontario. "If car companies like the design, they buy it. It's the same concept."

Phelan's reaction was visceral: That would violate the trust and partnership between supplier and buyer required to make concurrent engineering work. Who's right? Tune in next century.

—A. Alter

change (via the X.435 protocol, a new offshoot of the X.400 E-mail standard) sometime during the next two years, said Rose Marie Meyers, an EDI specialist (her title is "Corporate EDI Focal Point") at Boeing Computer Services.

The biggest advances in electronic commerce are yet to come: Some predict that the emerging Standard for the Exchange of Product Data could lead to a paradigm shift in heavy manufacturing (see related story, Page 64).

Manufacturers of consumer goods don't have to wait for a paradigm shift; they're already caught up in the one that has hit the retailing industry. The quick-response programs and inventory-replenishment systems found at Wal-Mart and other so-called "power retailers" combine EDI with other technologies (see "Retailing in Real Time," *CIO*, August 1992). Like EDI, point-of-sale, bar-code, inventory-management and sales-forecasting systems are not new. But when integrated with EDI, they enable retailers to keep their shelves full of the best-selling items at all

times without carrying large inventories.

Quick-response programs change the role of EDI and increase suppliers' responsibilities in many of the same ways as Ford's database-exchange program. EDI has gone from a technical linkage aimed at reducing paperwork to a way "to understand consumer-purchase patterns on the same day as they occur and re-

ery]," said Barbara Reilly, program director of Gartner's Inter-Enterprise Systems group. "The supplier is funding the retailer's inventory."

"Think of [a retail establishment] as a consignment shop," said Don Lee, vice president of information systems technology at Black & Decker, a small-appliance and tool manufacturer based in Towson, Md. Instead of taking responsibility for the

promotions. The system can automatically adjust the reordering threshold of its EDI systems—to ship more cordless drills to Retailer X when, say, 150 have been sold instead of 200. And the system can adjust the reordering threshold for individual stores.

"We get immediate feedback on what is selling and automatically stock our customers' shelves without intervention from someone from the customer side or our sales force."

—Don Lee

plenish our retail customers in a much more expeditious fashion," said H. Lynn Hazlett, vice president of business systems at VF Corp., a clothing manufacturer in Wyomissing, Pa. The company makes it the suppliers' responsibility, in Hazlett's words, "to have the right item at the right place at the right time."

BUT THERE ARE IMPORTANT differences between the quick-response world and heavy manufacturing. Retailers share point-of-sale data as well as inventory data with suppliers; instead of tracking factory-inventory levels, suppliers track purchasing patterns in the notoriously fickle consumer marketplace. As a result, state-of-the-art retail suppliers such as VF and Black & Decker have become adept at linking expert systems and sophisticated market-analysis systems with EDI.

There's another important difference CIOs should note: Quick-response programs usually place a financial burden on suppliers, since retailers have not adopted evaluated-receipt settlement. "Even though the inventory is being turned two or three times a month, you still hear [payable 30 or 45 days after deliv-

sales, the retailer is providing space. "Black & Decker manages the space and reacts to the market."

Black & Decker's IT infrastructure includes EDI links with close to 100 retailers and professional suppliers to the construction industry (as well as 150 of its own suppliers). These systems do more than tell Black & Decker that it's time to ship more toaster ovens; the company uses them to track consumer trends and to decide what products to stock, how to package them and where to display them. Point-of-sale (POS) information not only triggers new shipments to Black & Decker's customers once sales cross a certain threshold; it is also broken down by geographic region, zip code, individual store, shelf location and packaging. "We get immediate feedback on what is selling and automatically stock our customers' shelves without intervention from someone from the customer side or our sales force," said Lee.

It's hard to say where EDI ends and other applications begin at Black & Decker. Consider how current buying-pattern data affects actual deliveries. According to Lee, the company uses an expert system that analyzes POS information to track buying patterns and response to sales

VF, THE COMPANY BEHIND SUCH well-known clothing brands as Wrangler, Lee, Jantzen and Vanity Fair, takes a different approach to managing its retail customers' shelf space. The company offers its retail customers the capability to replenish their shelves in four to seven days after a consumer purchases an item and the ability to share "an information-rich environment," said Hazlett.

VF runs a central EDI clearinghouse that takes sales-transaction data from around the world, translates it into VF's own product codes and runs the data through a "model stock-management program" before shipping more jeans or blouses to the retailer. By tracking sales trends, this system determines whether to restock the item, in what quantity, and whether to ship immediately or after more orders arrive. If stone-washed jeans are again the rage and acid-washed jeans are becoming passé, the system makes sure that the next shipment contains more of the fashionable item and starts the process of adjusting production schedules and notifying VF's own textile suppliers. "We can determine from a large population of retailers what items sold yesterday, last week or last month, and influence our own production and identify sales opportunities for our retail customers," said Hazlett.

These systems, he said, are "totally driven by the EDI transactions. This is beyond where EDI was ever envisioned. It's enabled us to turn EDI into a business process that can elaborately measure performance."

EDI has indeed come a long, long way from the modest goal of replacing paper purchase orders. As Ford's Phelan pointed out, "having these technologies in place allows us to reengineer the process." □

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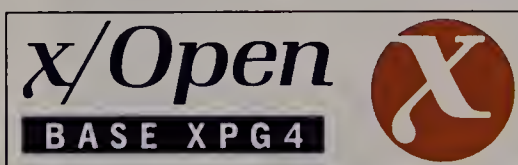
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PC Census Takers

The proliferation of PCs and the need to comply with software-licensing regulations are prompting many organizations to take stock of their existing desktop investments. Several vendors offer asset-management packages for just that purpose.

BY LUCIE JUNEAU

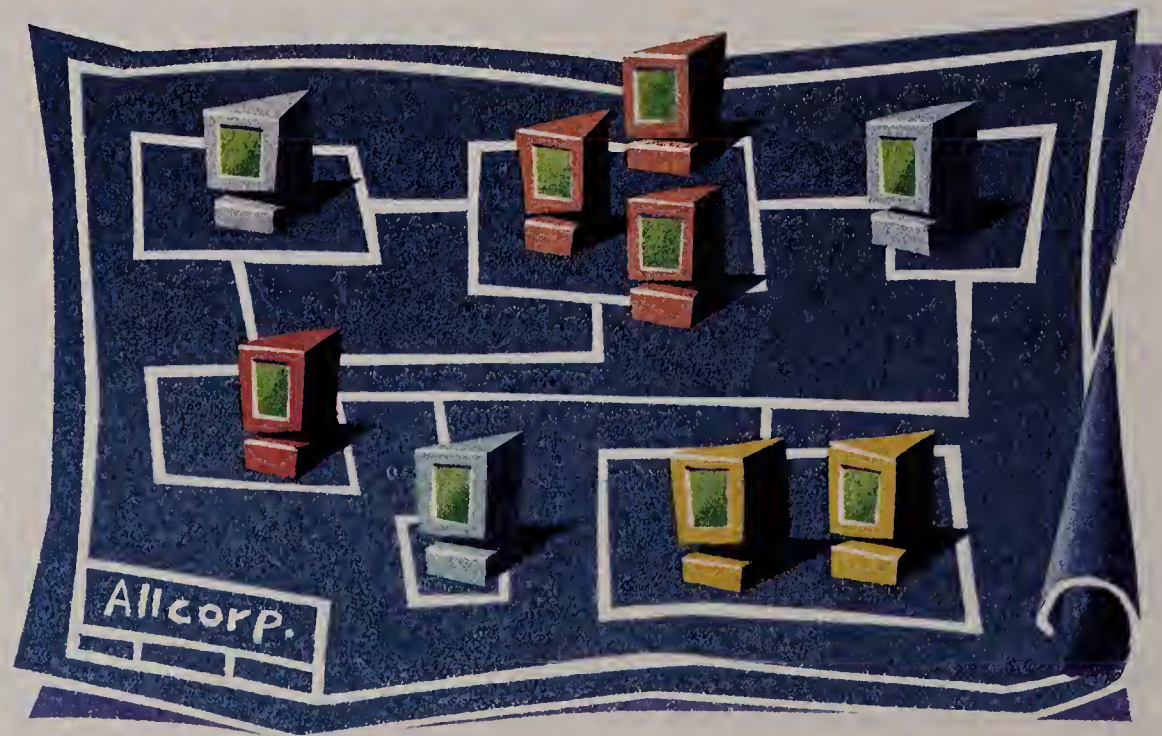
Personal computers began populating the workplace more than a decade ago, but many IS managers are just beginning to take an interest in PC demography. Prodded by the migration of strategic corporate information from mainframes to local area networks, many IS executives are now investing in homegrown or commercial auditing packages that can provide vital statistics on PCs and PC-based investments.

In large companies with thousands of PCs and workstations, financial managers are realizing that desktop systems represent a major corporate investment, according to Kristin Marks, managing director of Networks Are Our Lives Inc., a consulting firm based in Scarsdale, N.Y. But even when the combined value of workstation-based assets approaches or equals that of corporate mainframe investments, few companies devote comparable resources to overseeing PCs. To protect and optimize their desktop assets, managers need tools to determine how many PCs or workstations they have, where they're lo-

cated, and what their software and hardware configurations are.

Many organizations are taking a serious look at their PC-auditing capabilities, particularly in light of the need to comply with software-licensing regulations. Until recently, the only way to take stock of PC hardware and software was to walk around the company premises, disassembling each PC and perusing its directories. The process was labor-intensive and practically unworkable. Today, several vendors—including Tally Systems Corp., Horizons Technology Inc., Brightwork Development Inc., MAGEE Enterprises Inc., Frye Computer Systems Inc. and LAN Support Group—offer electronic inventory capabilities to help managers automatically determine the hardware and software configurations of their PCs and file servers.

Most asset-management packages write the data they collect to a database on the network server. Some products emphasize inventory information, collecting many configuration details (Frye's LAN Directory tracks some 400 hardware and software items for each PC). Others, such as Brightwork's LAN Automatic Inventory (LAI), provide bare-bones configuration information but emphasize asset management, including fields to indicate where the device or software was purchased; its cost; and depreciation, warranty and maintenance information, for example. Typically, users must enter this information manually or import it from another source, such as a purchasing application. Products such as LAN Support Group's BindView offer detailed configuration information as well as asset-management features. Some products also allow users to enter information about network devices, such as hubs, and even



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non-computer assets, such as office furniture.

Many vendors of configuration/inventory-management products also offer electronic software-distribution products (or provide configuration/inventory capabilities for other vendors' software-distribution products). This makes sense because before managers can distribute software electronically, they must know what is on users' desktops, according to Bill Kirwin, vice president of the personal computing service at the Gartner Group, an IT research firm based in Stamford, Conn. Without an automatic inventory product, it can be difficult to distribute software such as Microsoft's Windows operating system to every PC on a network. Windows must be configured differently for each PC, depending on the type of monitor and mouse the machine is using. Installing Windows on a large group of PCs can therefore be a nightmare for managers who don't have configuration information at their fingertips.

The ability to access detailed PC-configuration information opens up a host of new capabilities. For example, it can make it easy to locate assets when they're needed: When a 486 PC with 1,000MB of memory is needed to run a special application, a manager will know just where to look. Auditing products can also protect an organization against theft by alerting managers to changes in workstation configurations: If a PC has an 80MB hard drive on Monday and a 40MB drive on Tuesday, a manager may suspect that something's amiss.

Systems managers can use auditing packages to monitor resources such as disk space and memory: Products such as MAGEE Enterprises' Network HQ and LAN Support Group's BindView Network Control System (NCS) can alert managers when system resources fall below the minimum thresholds they've established. BindView NCS also provides programmable priority levels: Some configuration changes will trigger an immediate alert, while others can be flagged. Several products provide alerting capabilities based on

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the ability to detect exceptions, for example, if a product detects any user running a version of DOS older than 3.0.

Asset-management products that allow managers to maintain warranty and maintenance information can be instrumental in helping them decide whether to repair or replace components or upgrade or replace software. In addition, some asset-management packages can act as back-end databases for help-desk products: Staff members who can access configuration information about users' PCs will find it helpful.

Because automated PC-asset management is so new, managers are just beginning to discover what they can do with it. As they attempt to optimize the information now at their disposal, managers must consider issues such as user privacy. PCs have evolved as user-controlled processors; part of their appeal has been that they allow users to work on their own, minimizing dependence on IS resources. Users, therefore, have a sense of ownership over their PCs, and they may have applications on their machines that they would rather keep to themselves—personal and possibly unlicensed applications or games, for example. Exercising more control over what have heretofore been considered personal assets may arouse fears of Big Brother, according to the Gartner Group's Kirwin.

In some organizations, the only culturally acceptable solution may be to implement asset management from the bottom up rather than from the top down, Kirwin said. If users can generate configuration files that can then be mailed electronically to net-

work managers, they will be able to exercise more control. PC-utility vendors such as Beaverton, Ore.-based Central Point Software Inc. and Cupertino, Calif.-based Symantec Inc. may soon provide configuration-management utilities that will make this approach more feasible.

To identify software or hardware products, most inventory packages match information found in PC directories with information stored in their master files or databases. If a match is found, the package will identify the PC asset.

Vendors' databases and report generators vary considerably. MAGEE Enterprises' Network HQ uses an ASCII database. From there, data can be exported to other vendors' spreadsheets, databases or reporting packages. Several products include their own reporting packages, but some are rudimentary. Products such as Intel Corp.'s LANDesk make up for modest reporting capabilities by providing strong links to other applications, such as spreadsheets. LANDesk supports dynamic data exchange (DDE) and object linking and embedding (OLE), capabilities that make it easy to share information between applications and allow updated data from one application to be reflected in another.

Many vendors obtain the information in their databases' master files from third parties that maintain lists of hardware or software packages. The Software Publishers Association (SPA) in Washington is one such organization. Because such lists are often far from comprehensive and sometimes inaccurate, vendors whose products rely heavily on them may misidentify—or fail to identify—users' products.

Marks cited one such misidentification: Microsoft's Windows environment comes with a program called Write, a word-processing utility launched by an executable file called write.exe. Unfortunately, the SPA list on which several electronic inventory packages rely identifies write.exe as belonging to a Software Publishing Corp. package called PFS:Write. Unless the inventory product's master file is amended, Microsoft's Write

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program will be misidentified as PFS:Write.

Some vendors claim that their products virtually eliminate misidentification by including algorithms that go beyond mere file-name comparisons. When Tally's NetCensus—a product optimized for networked PCs—identifies software, it also considers file length and date and checks for the presence of other files necessary to run the application. LAN Support Group's BindView NCS takes similar precautions.

Many products can be "taught" to recognize new software and hardware products. NetCensus generates a "file not identified" report when it runs across executable or batch files that it doesn't recognize. After reviewing the report, users may add the previously unidentified asset to the product database. Brightwork's LAI and MAGEE Enterprises' Network HQ can also be customized to recognize new products.

Most packages include free database fields where users can enter data about assets that the product doesn't audit automatically. The latest version of Horizons' LAN Auditor includes fields for general equipment where users can enter information on devices such as print servers, routers, bridges and gateways. Ideally, asset-management products should be able to monitor these devices automatically, said Marks. Today, many large organizations monitor these products using separate management tools based on the Simple Network Management Protocol (SNMP). As a result, many managers maintain two sets of data—desktop data and infrastructure data. Users need tools that will allow them to monitor all of their network assets.

Some vendors with relatively sophisticated software-identification capabilities can detect software serial numbers. This capability can make it easier to determine that a company is in compliance with licensing requirements. If a serial number for an application that is supposed to be installed in only one place shows up on many PCs, a network manager will detect a problem. Some

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software vendors embed their product's serial number in the software. However, because no current standard method of embedding that information exists, identifying an application's serial number can be difficult. And many vendors don't embed serial numbers in their software at all. As a result, vendors such as Tally and Frye can identify the serial numbers of selected, major software packages only. Standards for the use of serial numbers will eventually make it easier to identify them.

Managers can obtain more detailed information about software usage from products that provide usage tracking. One software-distribution product, Systems Center's AM:PM, provides a usage-tracking feature that runs continuously on workstations, monitoring which applications are used and how often. The information collected can help managers determine how to allocate software resources, perhaps providing them with a rationale for reallocating resources from some workstations to others rather than purchasing additional licenses.

AM:PM, which provides inventory management as well as software distribution, runs on IBM mainframes. Mainframe-based PC-auditing products may be more practical than LAN-based solutions for collecting data in organizations with 1,000 or more workstations because processing all of that data on a PC can be difficult, vendors of these products claim. Collecting the data on a mainframe allows AM:PM users to manage information using relational databases such as DB2, which make querying and massaging data relatively easy. Other IBM mainframe-based software-

distribution products optimized for PC data collection include Synchrony, from Telepartner International Inc. N.A., which will soon be available in a LAN-based version.

Managers must make sure that the packages they select will audit all of the PCs they need to audit. Some packages monitor 386 and 486 PCs but not older PCs; others monitor networked PCs but not standalone PCs. Some products operate only in Novell NetWare environments; others will operate in other environments but do not provide full functionality in those environments. Intel's LANDesk Manager (a collection of LAN-management tools including an inventory feature), Brightwork's LAI and LAN Support Group's BindView NCS operate across network routers and bridges to collect PC information from multiple LANs. This capability is critical for organizations that are looking for an enterprisewide auditing solution.

In the future, more vendors may include auditing capabilities as part of an extended set of management tools, as Intel does via its LANDesk Manager. Comdisco Inc.'s Class for Windows—which does not include auditing capabilities but can interact with auditing products—features an order-management module that lets companies collect product data via electronic data interchange as part of the product-acquisition process. Collecting data such as ship dates, serial numbers and warranty information this way saves users from inputting asset-management information. The product also has lease management, problem management and a chargeback capability.

Within a few years, the auditing capabilities offered by many of the smaller vendors mentioned here will be included in system software products provided by vendors such as Microsoft, Novell and IBM, analysts say. Meanwhile, managers can use these specialty products to start exercising some control over their runaway PC environments. ☐

Lucie Juneau is a freelance writer based in Salem, Mass.

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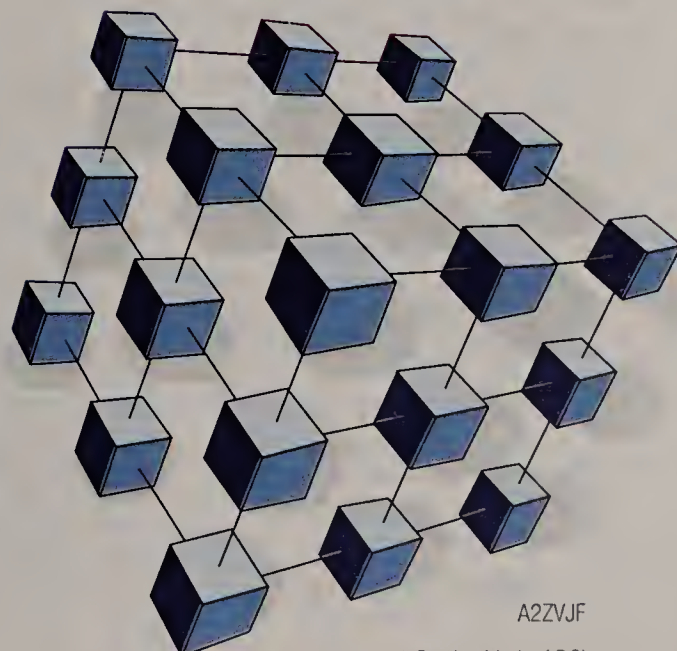
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574. "The REAL Language of Business" (Page 36) — CIOs must learn to explain the benefits of IT in hard dollars. By Allan E. Alter

575. "A Watertight Case" (Page 40) — regionalization and a new IT plan reduced costs and improved service for The Perrier Group. By Megan Santosus

576. "The Engine of Change" (Page 62) — a materials-management system named TALON has put NYC's Transit Authority back on track. By Megan Santosus

577. "The Road to Recovery" (Page 68) — the Medical Center of Delaware's materials-management system cuts inventory and labor costs and generates new revenue. By Richard Pastore

578. "An IS Energy Audit" (Page 72) — Lone Star Gas Co. has streamlined service and cut costs with a new customer-information system. By Meghan O'Leary

579. "Bargaining Power" (Page 76) — a single, worldwide purchasing system saves Texas Instruments millions annually. By Meghan O'Leary

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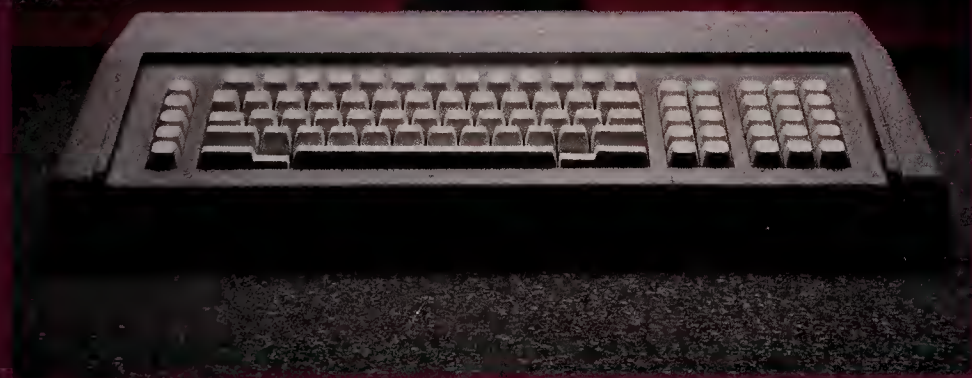
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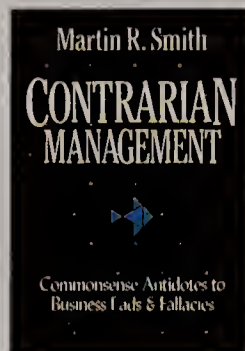
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OFF THE SHELF

CONTRARIAN MANAGEMENT Commonsense Antidotes to Business Fads & Fallacies

By Martin R. Smith
American Management Association
(New York), 1992
262 pages, \$21.95



The trouble with relying on conventional wisdom in business is that few situations in which managers find themselves are, in fact, truly conventional. Unfortunately, too many managers seek solutions in the hoary clichés and time-trodden myths promulgated by business schools and managerial gurus. In *Contrarian Management*, Martin R. Smith pierces these myths and hypocrisies with his cynic's pen and in their deflation exposes truths about how things

really work in business.

These truths are embodied in "contrarian reality," a compendium of wisdom designed to disabuse managers of their faith in such subjects as ESOPs ("a disaster"); MRP II ("leaves in its trail a sad-sack bunch of failed managers"); and—yes—even information technology ("a tool, not a god").

Smith's writing style is concise, often brusque and occasionally very funny. The book's irreverent tone is apparent as early as the table of contents. The chapter on nepotism is entitled "We Just Put Uncle Herb on the Payroll"; a discussion of the secrets of success is called "Why Many Apparently Dumb People Are in Top Management."

Relying on anecdotes gleaned from his own experiences as a manager and consultant, Smith pokes gaping holes in the snippets of conventional wisdom that kick off each chapter. Take, for example, the bromide that

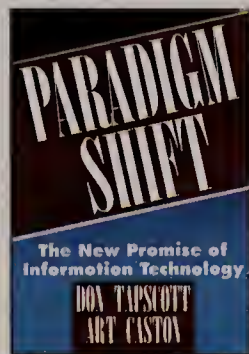
you should let your emotions show when things go wrong so that peers and subordinates know what to expect if they incur your displeasure. Smith offers the case of a production manager named Mort, who displayed an unseemly tendency to complain when there was something to complain about. Not only did his associates not respect and learn from his emotional honesty: They regarded him as a joke. If you want respect, Smith advises, always keep your cool.

Skeptical smirk notwithstanding, Smith doesn't go so far as to say that conventional wisdom doesn't have its place. The secret is to "become adept at pretending to follow the conventional wisdom while actually following the business reality."

Even if you dismiss Smith's dismissals as superficial or not always apt, *Contrarian Management* is entertaining, readable and good for a few laughs.

PARADIGM SHIFT The New Promise of Information Technology

By Don Tapscott and Art Caston
McGraw-Hill Inc. (New York), 1992
337 pages, \$24.95



Books with big, definitive titles set up expectations of epic scope and revelatory conclusions that are often difficult to live up to. *War and Peace* succeeds; Will and Ariel Durant's *The Story of Civilization* does not. *Paradigm Shift*, by Don Tapscott and Art Caston, is the business equivalent of these momentous-sounding tomes. And while it is historically much smaller in scale, it does deliver an informative and enlightening perspective on what the authors call the "second era" of the information age.

Paradigm Shift, which might alternatively have been titled *Everything IS Managers Need to Know about Where They Are and Where They're Going But Have Been Too Busy to*

Ask, neatly ties new approaches to business and information technology to the new world geopolitical environment. "Just as the organizational structures, business environments and old world order are being dramatically altered by ongoing global changes, the first era of information technology is experiencing a similar fate. Technology walls are falling. Old computing architectures are being overthrown.... Like traditional cold war thinking, the old approach to technology is proving to be inadequate to deal with the new world."

In this new world, characterized by the promise of open, networked client/server enterprises, companies will be able to adopt high-performance team structures, function as integrated businesses and develop new relationships with external organizations. Companies that seize the day by exploiting these new opportunities, the authors argue, can achieve practical, short-term benefits, while positioning themselves for long-term success.

With entire chapters devoted to subjects like open systems and business reengineering, *Paradigm Shift*

offers both a primer and a detailed analysis of IT trends that managers can't afford to ignore. And while the authors are enthusiastic about their subject, they are never thoughtlessly boosterish. Indeed, the book is at least as important for the questions it urges readers to ask as for the steps it recommends they take.

Based on the experiences of more than 4,500 companies and government organizations, *Paradigm Shift* is rich in case studies, many of them oft-told tales, but with a few fresh faces into the bargain. The combination of anecdote and exposition makes the book a valuable tool for CIOs who must explain to their senior executives the options available—and the stakes involved—in this new, technological world order.

Like many business books on the market today, *Paradigm Shift* is about managing change. It stands out because its call to action is set in an exhaustively detailed, lucidly explained context that enables readers to see both the big picture and all the tiny, but crucial, brush strokes that create it. That's what truly big books do.

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